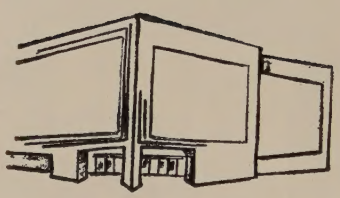
NORTH CAROLINA GEOLOGICAL AND ECONOMIC SURVEY



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RUBY-THROATED HUMMINGBIRD. Archilochus colubris (Linn.) Male and Female

NORTH CAROLINA GEOLOGICAL AND ECONOMIC SURVEY

JOSEPH HYDE PRATT, STATE GEOLOGIST

VOLUME IV

BIRDS OF NORTH CAROLINA

BY

T. GILBERT PEARSON, C. S. BRIMLEY AND H. H. BRIMLEY

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LETTER OF TRANSMITTAL

Chapel Hill, N. C., April 1, 1918.

To His Excellency, Honorable T. W. Bickett,
Governor of North Carolina.

Sir:—There is herewith submitted for publication, as Volume IV of the reports of the North Carolina Geological and Economic Survey, a treatise on *The Birds of North Carolina* which has been prepared by Mr. T. Gilbert Pearson, Secretary of the National Association of Audubon Societies; Mr. H. H. Brimley, Curator of the State Museum, and Mr. C. S. Brimley, Naturalist.

This report was printed in 1913, by E. M. Uzzell, Public Printer, and the material was all ready for binding when the whole edition was destroyed by the fire which burned Mr. Uzzell's plant. In this reprint additional matter has been added in the way of notes and illustrations, bringing the volume up to date.

Yours respectfully,

Joseph Hyde Pratt,
State Geologist.

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LETTER OF TRANSMITTAL

Chapel Hill, N. C., June 1, 1913.

To His Excellency, Honorable Locke Craig,
Governor of North Carolina.

Sir:—I herewith submit for publication, as Volume IV of the reports of the North Carolina Geological and Economic Survey, a report on *The Birds of North Carolina* which has been prepared by Mr. T. Gilbert Pearson, Secretary of the National Association of Audubon Societies; Mr. H. H. Brimley, Curator of the State Museum, and Mr. C. S. Brimley, Naturalist.

This report is published as one of the series of volumes, as it represents a detailed study, and, as far as possible, a complete report of the subject up to the present time.

Yours respectfully,

Joseph Hyde Pratt,
State Geologist.

PREFACE

The present volume, *Birds of North Carolina*, is a joint publication of the North Carolina Geological and Economic Survey, the State Audubon Society of North Carolina, and the State Museum. Mr. T. Gilbert Pearson, former Secretary of the North Carolina Audubon Society, was asked to take the supervision of the work, and, after consultation with Messrs. H. H. and C. S. Brimley, they decided on a joint authorship. The State Audubon Society of North Carolina for the study and protection of wild birds and animals authorized the preparation of the material, and appropriated the necessary funds to have prepared the original drawings and paintings with which it is illustrated.

The object of this publication is to place in the hands of interested persons a book of ready reference which will be of assistance to them in acquiring further information regarding the birds of North Carolina; and also to preserve in permanent form the hitherto widely scattered data relative to the distribution and occurrence of the many rare species that have been found to occur within the borders of the State. To assist the student in identifying birds, an artificial key to the various orders, families, genera, and species of birds has been given, as well as a detailed description of each one treated. As a still further aid, the book has been somewhat more fully illustrated than is usual in works of this character. A record of the presence of a rare bird is of little scientific value unless the date and place of its appearance are noted; hence there is frequent mention in the text of the year, month, and day when birds of infrequent occurrence have been noted, together with a citation of the authorities for the statement.

The volume takes up, first, a brief historical sketch of North Carolina ornithology, and an account of the work of the State Audubon Society. It has been prepared by T. Gilbert Pearson, who was the founder of the society and who for many years was its very efficient secretary. Following this is a sketch by C. S. Brimley on "Life Zones and Bird Distribution," which gives a description of the four life zones represented in North Carolina.

Before taking up the systematic catalogue of North Carolina birds, there is given a short explanatory statement relating to keys and descriptions.

The descriptive list of birds of North Carolina contains records of the occurrence of 341 species and varieties of birds taken in North Carolina. It is necessarily an incomplete list, as new discoveries will continue to be made from time to time, but it is intended to serve as a basis for future observations, and as a book for consultation until a more adequate publication shall have taken its place.

In this catalogue the descriptions of species are taken mainly from the superb *Handbook of Birds of Eastern North America* by Frank M. Chapman, copyrighted 1895 and 1912 by D. Appleton & Co. For this courtesy both the authors and the Survey are indebted to the publishers. These descriptions are followed by an account of the range of the species in North Carolina, and, as far as possible, full notes are given regarding observations made on the habits of the birds.

Following the catalogue of the birds, there are Appendices on the Bibliography of North Carolina Birds; on Migration of Birds at Raleigh, North Carolina, 1895 to 1911, as recorded by H. H. Brimley and C. S. Brimley; on the Song Period of Birds at Raleigh as recorded by C. S. Brimley; and a brief Glossary. The authors and the Survey are indebted to a number of North Carolina bird students, and many references have been made in the general text to the material furnished by them. Of these the authors particularly wish to mention the following: Mr. T. W. Adickes, Mr. Stephen C. Bruner, Mr. George W. MacNider, Mr. Z. P. Metcalf, and Mr. Alexander L. Feild of Raleigh; Dr. J. W. P. Smithwick of Kinston; Mr. Thomas A. Smithwick of Merry Hill, Bertie County; Mr. R. W. Collett of Raleigh; Mr. J. H. Armfield of Greensboro; and Mr. Ernest Seeman of Durham. To those outside the State who have rendered special assistance, we wish to express our appreciation of the kindness of Dr. C. Hart Merriam, and of Mr. Henry W. Henshaw, each of whom, in turn, as Chief of the United States Biological Survey, has permitted the examination of all Government migration-schedules from North Carolina; of Mr. W. W. Cooke and Mr. W. L. McAtee, assistants in the United States Biological Survey, for several overlooked records; of Dr. Louis B. Bishop

of New Haven, Connecticut, for his observations on the birds of Pea Island; of Mr. William Brewster of Cambridge, Massachusetts, for data on specimens of North Carolina birds in his collection; and of Mr. Waldron DeWitt Miller for critically reviewing the identification keys.

The Survey and authors are indebted to the National Association of Audubon Societies for very valuable assistance in editing and preparing the manuscript of this volume, and we wish herewith to express our grateful appreciation for the many courtesies extended to us by this association.

In the preparation of this volume, the authors have given their time to the work very willingly and enthusiastically, without remuneration other than the pleasure that they may derive from the thought and hope that they may be able to arouse in some slight degree a more lively appreciation of the value of studying and preserving the rich bird-life with which North Carolina is so abundantly blessed. They have shared the labor in preparing the manuscript, and have, without stint, revised one another's writings. The final drafting of the manuscript, however, as well as the superintending of the preparation of the illustrations, has been done by Mr. Pearson.

When we consider the great economic importance of wild birds as destroyers of many of those insects which are injurious to growing crops, stored grain, fruit trees and forests, and also the value of the esthetic effect of their presence about the home, we marvel that any citizen should permit the wanton killing of useful species on his premises. Our native game birds, such as the Ruffed Grouse, Quail, Wild Turkey, Woodcock, and the various species of Wild Ducks and Geese, are of such inestimable value to the State that it is a matter of regret that as yet there has been no adequate legislative enactment looking to their preservation. The Survey and the authors, in this connection, urge the abolition of the multitudinous and confusing local county game laws, and a substitution in their place of State-wide uniform laws regulating the seasons when the various kinds of birds and game animals may be taken; and the establishment of a State Game Commission, to be supported by a fund collected from resident and nonresident hunters' licenses. In

view of the rapid decrease of our game birds and game animals, we would further advocate most earnestly the absolute prohibition of the sale of all wild game, which act would be in conformity with the action already taken in the greater number of the States in the Union. Unless advancement is made along these lines, it is plain to any intelligent observer that North Carolina is doomed to suffer an irreparable loss in the diminution of wild life, which is one of its chief natural resources.

Another purpose of the present volume is, therefore, to create a sentiment for carrying out the measures suggested above.

JOSEPH HYDE PRATT,

State Geologist.

CONTENTS

	Page
Preface	vii
List of Illustrations	xvii
Ornithological Historical Sketch	1
Recent Ornithological Work	6
The State Audubon Society	7
Life Zones and Bird Distribution	10
The Canadian Zone	10
The Alleghanian or Transition Zone	10
The Carolinian or Upper Austral Zone	11
Lower Austral or Austro-Riparian Zone	11
Seasonal Distribution	12
Explanation of Keys and Descriptions	13
Key to the Orders	14
A descriptive List of North Carolina Birds	17
Order Pygopodes: Diving Birds	17
Family Colymbidæ: Grebes	17
Genus Colymbus (*Linn.*)	17
Genus Podilymbus (*Less.*)	19
Family Gaviidæ: Loons	20
Genus Gavia (*J. R. Forst*)	20
Family Alcidæ: Auks, Murres, and Puffins	22
Genus Uria (*Briss.*)	23
Genus Alca (*Linn.*)	23
Genus Alle (*Linn.*)	24
Order Longipennes: Long-Winged Swimmers	25
Family Stercorariidæ: Jaegers and Skuas	25
Genus Stercorarius (*Briss.*)	25
Family Laridæ: Gulls and Terns	26
Subfamily Larinæ: Gulls	27
Genus Larus (*Linn.*)	27
Subfamily Sterninæ: Terns	32
Genus Gelochelidon (*Brehm.*)	32
Genus Sterna (*Linn.*)	33
Genus Hydrochelidon (*Boie*)	39
Family Rynchopidæ: Skimmers	40
Genus Rynchops (*Linn.*)	40
Order Tubinares: Tube-Nosed Swimmers	41
Family Procellariidæ: Fulmars, Shearwaters, and Petrels	41
Genus Puffinus (*Briss.*)	41
Genus Oceanites (*K. and B.*)	43
Order Steganopodes: Totipalmate Swimmers	45
Family Sulidæ: Gannets	45
Genus Sula (*Briss.*)	45
Family Anhingidæ: Darters	46
Genus Anhinga (*Briss.*)	46
Family Phalacrocoracidæ: Cormorants	47
Genus Phalacrocorax (*Briss.*)	48
Family Pelecanidæ: Pelicans	49
Genus Pelecanus (*Linn.*)	49

PAGE

Family Fregatidæ: Man-o'-War Birds ... 52
Genus Fregata (*Lacep.*) ... 52
Order Anseres: Lamellirostral Swimmers ... 53
Family Anatidæ: Ducks, Geese, and Swans ... 53
Genus Mergus (*Linn.*) ... 56
Genus Lophodytes (*Reichenb.*) ... 58
Genus Anas (*Linn.*) ... 59
Genus Chaulelasmus (*Bonap.*) ... 62
Genus Mareca (*Steph.*) ... 63
Genus Nettion (*Kaup.*) ... 64
Genus Querquedula (*Steph.*) ... 66
Genus Spatula (*Boie*) ... 66
Genus Dafila (*Steph.*) ... 68
Genus Aix (*Boie*) ... 69
Genus Marila (*Oken*) ... 70
Genus Clangula (*Oken*) ... 77
Genus Charitonetta (*Stejn.*) ... 79
Genus Harelda (*Steph.*) ... 80
Genus Somateria (*Leach*) ... 81
Genus Oidemia (*Flem.*) ... 82
Genus Erismatura (*Bonap.*) ... 84
Subfamily Anserinæ: Geese ... 85
Genus Chen (*Boie*) ... 85
Genus Anser (*Briss.*) ... 87
Genus Branta (*Scop.*) ... 88
Genus Dendrocygna (*Swains.*) ... 91
Genus Olor (*Wagl.*) ... 91
Order Herodiones: Herons, Storks, Ibises, etc ... 93
Family Ibididæ: Ibises ... 93
Genus Guara (*Reichenb.*) ... 93
Family Ciconiidæ: Storks ... 95
Genus Mycteria (*Linn.*) ... 95
Family Ardeidæ: Herons and Bitterns ... 95
Genus Botaurus (*Steph.*) ... 95
Genus Ixobrychus (*Billb.*) ... 96
Genus Ardea (*Linn.*) ... 97
Genus Herodias (*Boie*) ... 99
Genus Egretta (*T. Forst.*) ... 100
Genus Hydranassa (*Baird*) ... 101
Genus Florida (*Baird*) ... 102
Genus Butorides (*Blyth*) ... 104
Genus Nycticorax (*T. Forst.*) ... 105
Genus Nyctanassa (*Stejn.*) ... 106
Order Paludicolæ: The Marsh-Birds ... 106
Family Rallidæ: Rails, Gallinules, and Coots ... 107
Genus Rallus (*Linn.*) ... 107
Genus Porzana (*Vieill.*) ... 111
Genus Coturnicops (*Bonap.*) ... 112
Genus Creciscus (*Cab.*) ... 112
Genus Ionornis (*Reichenb.*) ... 113
Genus Gallinula (*Briss.*) ... 114
Genus Fulica (*Linn.*) ... 115
Order Limicolæ: Shore-Birds ... 116

PAGE
Family Phalaropodidæ Phalaropes ... 118
Genus Phalaropus (*Briss.*) ... 118
Genus Lobipes (*Cuv.*) ... 119
Genus Steganopus (*Vieill.*) ... 120
Family Recurvirostridæ: Avocets and Stilts ... 121
Genus Recurvirostra (*Linn.*) ... 121
Genus Himantopus (*Briss.*) ... 122
Family Scolopacidæ: Snipes, Sandpipers, etc ... 123
Genus Philohela (*Gray*) ... 124
Genus Gallinago (*Koch.*) ... 125
Genus Macrorhamphus (*T. Forst.*) ... 126
Genus Micropalama (*Baird*) ... 127
Genus Tringa (*Linn.*) ... 128
Genus Pisobia (*Billb.*) ... 129
Genus Pelidna (*Cuv.*) ... 131
Genus Ereunetes (*Illig.*) ... 132
Genus Calidris (*Illig.*) ... 133
Genus Limosa (*Briss.*) ... 134
Genus Totanus (*Bechst.*) ... 136
Genus Helodromas (*Kaup.*) ... 138
Genus Catoptrophorus (*Bonap.*) ... 138
Genus Machetes (*Cuv.*) ... 140
Genus Bartramia (*Less.*) ... 140
Genus Tryngites (*Cab.*) ... 141
Genus Actitis (*Illig.*) ... 142
Genus Numenius (*Briss.*) ... 143
Family Charadriidæ: Plovers ... 144
Genus Squatarola (*Cuv.*) ... 145
Genus Charadrius (*Linn.*) ... 145
Genus Oxyechus (*Reichenb.*) ... 147
Genus Ægialitis (*Boie*) ... 147
Genus Ochthodromus (*Reichenb.*) ... 149
Family Aphrizidæ: Surf-Birds and Turnstones ... 150
Genus Arenaria (*Briss.*) ... 150
Family Hæmatopodidæ: Oyster-Catchers ... 151
Genus Hæmatopus (*Linn.*) ... 151
Order Gallinæ: Gallinaceous Gallinaceous Birds ... 152
Family Odontophoridæ: American Quails ... 152
Genus Colinus (*Goldf.*) ... 152
Family Tetraonidæ: Grouse ... 153
Genus Bonasa (*Steph.*) ... 153
Family Meleagridæ: Turkeys ... 154
Genus Meleagris (*Linn.*) ... 154
Family Phasianidæ: Pheasants ... 156
Genus Phasianus (*Linn.*) ... 156
Order Columbæ: Pigeons and Doves ... 156
Family Columbidæ: Pigeons and Doves ... 156
Genus Zenaidura (*Bonap.*) ... 157
Genus Chæmepelia (*Swains.*) ... 158
Order Raptores: Birds of Prey ... 159
Family Cathartidæ: American Vultures ... 159
Genus Cathartes (*Illig.*) ... 160
Genus Catharista (*Vieill.*) ... 161

PAGE
Family Buteonidæ: Hawks, Eagles, Kites, etc. 162
Genus Elanoides (*Vieill.*) 162
Genus Ictinia (*Vieill.*) 163
Genus Circus (*Lacep.*) 164
Genus Accipiter (*Briss.*) 164
Genus Buteo (*Lacep.*) 166
Genus Archibuteo (*Brehm*) 169
Genus Aquila (*Briss.*) 170
Genus Haliætus (*Sav.*) 171
Family Falconidæ: The Falcons and Caracaras 173
Genus Falco (*Linn.*) 173
Family Pandionidæ: Ospreys 175
Genus Pandion (*Sav.*) 175
Family Aluconidæ: Barn Owls 177
Genus Aluco (*Flem.*) 177
Family Strigidæ: Owls 178
Genus Asio (*Briss.*) 178
Genus Strix (*Linn.*) 180
Genus Cryptoglaux (*Richm.*) 181
Genus Otus (*Penn.*) 181
Genus Bubo (*Dumeril*) 182
Genus Nyctea (*Steph.*) 184
Order Coccyges: Cuckoos, Kingfishers, etc. 184
Family Cuculidæ: Cuckoos 185
Genus Crotophaga (*Linn.*) 185
Genus Coccyzus (*Vieill.*) 185
Family Alcedinidæ: Kingfishers 187
Genus Ceryle (*Boie*) 187
Order Pici: Woodpeckers, etc. 188
Family Picidæ: Woodpeckers 188
Genus Dryobates (*Boie*) 188
Genus Sphyrapicus (*Baird*) 191
Genus Phlœotomus (*C. & H.*) 192
Genus Melanerpes (*Swains.*) 194
Genus Centurus (*Swains.*) 194
Order Macrochires: Goatsuckers, Swifts, and Hummingbirds 196
Family Caprimulgidæ: Goatsuckers 196
Genus Antrostomus (*Bonap.*) 196
Genus Chordeiles (*Swains.*) 199
Family Micropodidæ: Swifts 199
Genus Chætura (*Steph.*) 199
Family Trochilidæ: Hummingbirds 200
Genus Archilochus (*Reichenb.*) 200
Order Passeres: The Perching Birds 201
Family Tyrannidæ: Tyrant Flycatchers 202
Genus Tyrannus (*Lacep.*) 203
Genus Myiarchus (*Cab.*) 204
Genus Sayornis (*Gray*) 205
Genus Nuttallornis (*Ridgw.*) 205
Genus Myiochanes (*C. & H.*) 206
Genus Empidonax (*Cab.*) 207
Family Alaudidæ: Larks 210
Genus Otocoris (*Bonap.*) 211

PAGE
Family Corvidæ: Crows and Jays 212
Genus Cyanocitta (*Strickl.*) 213
Genus Corvus (*Linn.*) 213
Family Icteridæ: Blackbirds, Orioles, etc 216
Genus Dolichonyx (*Swains.*) 217
Genus Molothrus (*Swains.*) 219
Genus Agelaius (*Vieill.*) 219
Genus Sturnella (*Vieill.*) 220
Genus Icterus (*Briss.*) 222
Genus Euphagus (*Cass.*) 224
Genus Quiscalus (*Vieill.*) 224
Genus Megaquiscalus (*Cass.*) 226
Family Fringillidæ: Finches, Sparrows, etc 226
Genus Carpodacus (*Kaup*) 227
Genus Loxia (*Linn.*) 228
Genus Acanthis (*Borkh.*) 230
Genus Astragalinus (*Cab.*) 230
Genus Spinus (*Koch.*) 231
Genus Passer (*Briss.*) 232
Genus Plectrophenax (*Stejn.*) 233
Genus Calcarius (*Bechst.*) 233
Genus Pocœcetes (*Baird*) 234
Genus Passerculus 235
Genus Ammodramus (*Swains.*) 236
Genus Passerherbulus (*Mayn.*) 237
Genus Chondestes (*Swains.*) 241
Genus Zonotrichia (*Swains.*) 242
Genus Spizella (*Bonap.*) 243
Genus Junco (*Wagler*) 245
Genus Peucæa (*Aud.*) 247
Genus Melospiza (*Baird*) 248
Genus Passerella (*Swains.*) 251
Genus Pipilo (*Vieill.*) 251
Genus Cardinalis (*Bonap.*) 252
Genus Zamelodia (*Coues*) 253
Genus Guiraca (*Swains.*) 254
Genus Passerina (*Vieill.*) 255
Family Tangaridæ: Tanagers 256
Genus Piranga (*Vieill.*) 256
Family Hirundinidæ: Swallows 258
Genus Progne (*Boie.*) 259
Genus Petrochelidon (*Cab.*) 260
Genus Hirundo (*Linn.*) 260
Genus Iridoprocne (*Coues*) 261
Genus Riparia (*Forst.*) 262
Genus Stelgidopteryx (*Baird*) 263
Family Bombycillidæ: Waxwings 264
Genus Bombycilla (*Vieill.*) 264
Family Laniidæ: Shrikes 265
Genus Lanius (*Linn.*) 265
Family Vireonidæ: Vireos 267
Genus Vireosylva (*Bonap.*) 267
Genus Lanivireo (*Baird*) 269

PAGE

Genus Vireo (*Vieill.*) ... 272
Family Mniotiltidæ: Wood Warblers ... 272
Genus Mniotilta (*Vieill.*) ... 273
Genus Protonotaria (*Baird*) ... 274
Genus Helinaia (*Aud.*) ... 275
Genus Helmitheros (*Raf.*) ... 276
Genus Vermivora (*Ridgw.*) ... 277
Genus Compsothlypis (*Cab.*) ... 281
Genus Dendroica (*Gray*) ... 282
Genus Seiurus (*Swains.*) ... 299
Genus Oporornis (*Baird*) ... 301
Genus Geothlypis (*Cab.*) ... 303
Genus Icteria (*Vieill.*) ... 304
Genus Wilsonia (*Bonap.*) ... 305
Genus Setophaga (*Swains.*) ... 307
Family Motacillidæ: Wagtails and Pipits ... 308
Genus Anthus (*Bechst.*) ... 308
Family Mimidæ: Thrashers and Mockingbirds ... 309
Genus Mimus (*Boie*) ... 309
Genus Dumetella (*S. D. W.*) ... 310
Genus Toxostoma (*Wagl.*) ... 311
Family Troglodytidæ: Wrens ... 312
Genus Thryothorus (*Vieill.*) ... 313
Genus Thryomanes (*Scl.*) ... 314
Genus Troglodytes (*Vieill.*) ... 315
Genus Nannus (*Billb.*) ... 316
Genus Cistothorus (*Cab.*) ... 317
Genus Telmatodytes (*Cab.*) ... 318
Family Certhiidæ: Creepers ... 319
Genus Certhia (*Linn.*) ... 319
Family Sittidæ: Nuthatches ... 321
Genus Sitta (*Linn.*) ... 321
Family Paridæ: Titmice ... 324
Genus Bæolophus (*Cab.*) ... 324
Genus Penthestes (*Reichenb.*) ... 325
Family Sylviidæ: Kinglets, Gnatcatchers, etc. ... 326
Genus Regulus (*Cuv.*) ... 326
Genus Polioptila (*Sci.*) ... 328
Family Turdidæ: Thrushes and Bluebirds ... 329
Genus Hylocichla (*Baird*) ... 329
Genus Planesticus ... 333
Genus Sialia (*Swains.*) ... 334
Appendices ... 337
Bibliography ... 337
Migration of Birds at Raleigh, 1885-1915 ... 344
Song-period of Birds at Raleigh ... 349
Glossary ... 350
Index ... 352

ILLUSTRATIONS

COLORED PLATES

No.		*Facing Page*
1.	Ruby-Throated Hummingbird. *Archilochus colubris* (Linn.). Male and Female. *Frontispiece.*	
2.	Horned Grebe. *Colymbus auritus* (Linn.). Male and Female	18
3.	Royal Tern. *Sterna maxima* (Bodd.). Standing. Cabot's Tern. *Sterna sandvicensis acuflavida* (Cabot). Sitting	34
4.	Merganser. *Mergus americanus* (Cass.). Male and Female	56
5.	Wood Duck. *Aix sponsa* (Linn.). Male and Female	70
6.	Canada Goose. *Branta canadensis canadensis* (Linn.)	88
7.	Yellow-Crowned Night Heron. *Nyctanassa violacea* (Linn.). Adult above, immature below	106
8.	Purple Gallinule. *Ionornis martinicus* (Linn.)	114
9.	Hudsonian Curlew. *Numenius hudsonicus* (Lath.)	144
10.	Oyster-Catcher. *Hæmatopus palliatus* (Temm.)	150
11.	Bob-White. *Colinus virginianus virginianus* (Linn.). Male and Female	152
12.	Swallow-Tailed Kite. *Elanoides forficatus* (Linn.). Male and Female	162
13.	Duck Hawk. *Falco peregrinus anatum* (Bonap.). Male and Female	172
14.	Screech Owl. *Otus asio asio* (Linn.). Red and gray phases	182
15.	Red-Cockaded Woodpecker. *Dryobates borealis* (Vieill.). Male and Female	190
16.	Blue Jay. *Cyanocitta cristata cristata* (Linn.)	212
17.	Boat-Tailed Grackle. *Megaquiscalus major major* (Vieill.). Male and Female	226
18.	White-Throated Sparrow. *Zonotrichia albicollis* (Gmel.), Upper. Fox Sparrow. *Passerella iliaca iliaca* (Merrem), Lower	242
19.	Painted Bunting. *Passerina ciris* (Linn.). Male and Female	256
20.	Yellow-Throated Warbler. *Dendroica dominica dominica* (Linn.), Upper. Prothonotary Warbler. *Protonotaria citrea* (Bodd.), Lower	292
21.	Yellow Warbler. *Dendroica æstiva æstiva* (Gmel.), Upper. Black-Throated Blue Warbler. *Dendroica cærulescens cærulescens* (Gmel.), Male and Female, Lower	294
22.	Canada Warbler. *Wilsonia canadensis* (Linn.), Upper. Redstart. *Setophaga ruticilla* (Linn.), Male and Female, Lower	308
23.	Brown-Headed Nuthatch. *Sitta pusilla* (Lath.). Male and Female	322
24.	Robin. *Planesticus migratorius migratorius* (Linn.). Male and Female	334

BLACK AND WHITE PLATES

A	1.	A typical tree in the Cormorant rookery. The small cypress pictured contains twenty-eight occupied nests. (*Photo by H. H. Brimley*)	48
	2.	Nest of Bald Eagle. This nest is near the top of a very tall pine, growing in a thick swamp, two or three hundred yards from the shores of White Lake, Bladen County. The nest is very large, having been added to year after year. It is approximately a hundred feet from the ground, and the birds are reputed to have nested in this tree, or near by, for fifty years or more. (*Photo by T. W. Adickes*)	48
B	1.	Collecting a nest, with nearly grown young, of Great Blue Heron. Great Lake, Craven County. (*Photo by H. H. Brimley*)	96
	2.	Young Black Skimmer crouching and hiding in bunch of seaweed. Note the protective coloration. Royal Shoal, Pamlico Sound. (*Photo by H. H. Brimley*)	96

No. *Facing Page*

C 1. Cypress tree, Great Lake, Craven County. This tree contained six nests of Great Blue Heron when photographed (1909), and had been used by these birds for several years. (*Photo by H. H. Brimley*) 98

2. The same tree one year later, when it held four heron nests and fifteen nests of Florida Cormorant. Note how the Cormorants tend to kill the trees they use for nesting purposes. (*Photo by H. H. Brimley*) 98

D 1. Two young American Egrets in the tops of the tall cypresses of Crane Neck. (*Photo by T. W. Adickes*) 100

2. In the tall trees of Crane Neck Rookery. Nest and two young of American Egret. (*Photo by T. W. Adickes*) 100

E 1. One type of Fish Hawk's nest, Great Lake, Craven County. Built in a small cypress, at a low elevation. (*Photo by H. H. Brimley*) 174

2. A very neat, symmetrical Fish Hawk's nest, also on Great Lake. Old bird just alighting on nest. As the bird is about two feet in length, with a wing spread of about five feet, some idea of the size of the nest may be gathered. (*Photo by H. H. Brimley*) 174

TEXT FIGURES

PAGE

1. Holbœll's Grebe (Winter Plumage) 18
2. Pied-Billed Grebe 19
3. Common Loon; Great Northern Diver 21
4. Red-Throated Loon 22
5. Dovekie 24
6. Glaucous Gull 27
7. Great Black-Backed Gull 28
8. Herring Gull 29
9. Ring-Billed Gull 30
10. Laughing Gull 31
11. Bonaparte's Gull 32
12. Gull-Billed Tern 32
13. Forster's Tern 35
14. Common Tern 36
15. Roseate Tern 37
16. Least Tern 38
17. Sooty Tern 38
18. Black Tern 39
19. Black Skimmer 40
20. Cory's Shearwater 41
21. Greater Shearwater 42
22. Audubon's Shearwater 43
23. Sooty Shearwater 43
24. Wilson's Petrel 44
25. Gannet 46
26. Foot of Gannet (natural size) 46
27. Water-Turkey 47
28. Double-Crested Cormorant 48
29. White Pelican 50
30. Brown Pelican 51
31. Man-o'-War Bird 52
32. Red-Breasted Merganser (Adult Male) 57
33. Hooded Merganser (Adult Male) 58

		PAGE
34.	Mallard (Adult Male)	60
35.	Black Duck	61
36.	Gadwall	62
37.	European Widgeon (Adult Male)	63
38.	Baldpate (Adult Male)	64
39.	Green-Winged Teal (Adult Male)	65
40.	Blue-Winged Teal (Adult Male)	66
41.	Shoveller (Adult Male)	67
42.	Pintail (Adult Male)	68
43.	Redhead (Adult Male)	71
44.	Canvasback (Adult Male)	72
45.	Scaup; Big Blackhead (Adult Male)	74
46.	Ring-Necked Duck (Adult Male)	76
47.	Golden-Eye (Adult Male)	77
48.	Barrow's Golden-Eye (Adult Male)	78
49.	Bufflehead (Adult Male)	79
50.	Old-Squaw (Adult Male)	80
51.	King Eider (Adult Male)	81
52.	Scoter (Adult Male)	82
53.	White-Winged Scoter (Adult Male)	83
54.	Surf Scoter (Adult Male)	84
55.	Ruddy Duck (Adult Male)	85
56.	Greater Snow Goose	86
57.	White-Fronted Goose (Adult)	88
58.	Brant	90
59.	Whistling Swan	92
60.	White Ibis	94
61.	Bittern	96
62.	Least Bittern	97
63.	Great Blue Heron	98
64.	Egret	99
65.	Snowy Egret	101
66.	Louisiana Heron	102
67.	Little Blue Heron	103
68.	Green Heron	104
69.	Black-Crowned Night Heron	105
70.	King Rail	108
71.	Clapper Rail	109
72.	Virginia Rail	110
73.	Sora	111
74.	Yellow Rail	112
75.	Black Rail	113
76.	Florida Gallinule	114
77.	Coot	115
78.	Foot of Coot	115
79.	Red Phalarope	119
80.	Northern Phalarope	120
81.	Foot of Northern Phalarope	120
82.	Wilson's Phalarope	121
83.	Avocet	122
84.	Black-Necked Stilt	123
85.	Woodcock	124
86.	Wilson's Snipe	125

PAGE

87. Dowitcher 126
88. Stilt Sandpiper 127
89. Knot 128
90. Pectoral Sandpiper 129
91. White-Rumped Sandpiper 130
92. Least Sandpiper 131
93. Foot of Least Sandpiper 131
94. Red Backed Sandpiper 132
95. Foot of Semipalmated Sandpiper 133
96. Sanderling 134
97. Hudsonian Godwit 135
98. Greater Yellow-Legs 136
99. Yellow-Legs 137
100. Solitary Sandpiper 138
101. Willet 139
102. Ruff (Female or Immature Male) 140
103. Upland Plover 141
104. Spotted Sandpiper 142
105. Long-Billed Curlew 143
106. Black-Bellied Plover 145
107. Foot of Black-Bellied Plover 145
108. Golden Plover 146
109. Foot of Golden Plover 146
110. Killdeer 147
111. Semipalmated Plover 148
112. Piping Plover 149
113. Wilson's Plover 149
114. Ruddy Turnstone 150
115. Ruffed Grouse 153
116. Foot of Ruffed Grouse 153
117. Wild Turkey 155
118. Mourning Dove 158
119. Ground Dove 158
120. Turkey Vulture 160
121. Black Vulture 161
122. Mississippi Kite 163
123. Marsh Hawk (Male) 164
124. Sharp-Shinned Hawk 165
125. Cooper's Hawk 166
126. Red-Tailed Hawk 167
127. Red-Shouldered Hawk 168
128. Broad-Winged Hawk 169
129. Rough-Legged Hawk 170
130. Golden Eagle 171
131. Foot of Golden Eagle 171
132. Bald Eagle 172
133. Foot of Bald Eagle 172
134. Pigeon Hawk 174
135. Sparrow Hawk 174
136. Osprey 176
137. Barn Owl 177
138. Long-Eared Owl 179
139. Short-Eared Owl 180

		PAGE
140.	Barred Owl	181
141.	Great Horned Owl	183
142.	Foot of a Snowy Owl	184
143.	Yellow-Billed Cuckoo	186
144.	Black-Billed Cuckoo	187
145.	Belted Kingfisher	187
146.	Foot of Belted Kingfisher	187
147.	Hairy Woodpecker	189
148.	Foot of Hairy Woodpecker	189
149.	Downy Woodpecker	190
150.	Yellow-Bellied Sapsucker	192
151.	Pileated Woodpecker	193
152.	Red-Headed Woodpecker	194
153.	Flicker	195
154.	Chuck-Will's-Widow	197
155.	Nighthawk (upper) and Whip-Poor-Will (lower)	198
156.	Chimney Swift	200
157.	Foot and Tail of Chimney Swift	200
158.	Kingbird	203
159.	Crested Flycatcher	204
160.	Phœbe	205
161.	Wood Pewee	206
162.	Yellow-Bellied Flycatcher	208
163.	Acadian Flycatcher	208
164.	Alder Flycatcher	209
165.	Least Flycatcher	210
166.	Horned Lark	211
167.	Prairie Horned Lark	212
168.	Northern Raven	214
169.	Crow	215
170.	Bobolink (a male in nuptial plumage)	218
171.	Cowbird	219
172.	Red-Winged Blackbird	220
173.	Meadowlark	221
174.	Orchard Oriole	222
175.	Baltimore Oriole	223
176.	Rusty Blackbird	224
177.	Purple Grackle	225
178.	Purple Finch	228
179.	Crossbill	229
180.	Redpoll	230
181.	Goldfinch	231
182.	Pine Siskin	232
183.	Snow Bunting	233
184.	Vesper Sparrow	234
185.	Savannah Sparrow	236
186.	Grasshopper Sparrow	237
187.	Henslow's Sparrow	238
188.	Leconte's Sparrow	239
189.	Sharp-Tailed Sparrow	239
190.	Seaside Sparrow	240
191.	Lark Sparrow	241
192.	White-Crowned Sparrow	242

		PAGE
193.	Chipping Sparrow	244
194.	Field Sparrow	245
195.	Slate-Colored Junco	246
196.	Bachman's Sparrow	247
197.	Song Sparrow	248
198.	Lincoln's Sparrow	250
199.	Swamp Sparrow	250
200.	Towhee	251
201.	Cardinal	253
202.	Rose-Breasted Grosbeak	254
203.	Blue Grosbeak	254
204.	Indigo Bunting	255
205.	Scarlet Tanager	257
206.	Summer Tanager	258
207.	Purple Martin	259
208.	Cliff Swallow	260
209.	Barn Swallow	261
210.	Tree Swallow	262
211.	Bank Swallow	263
212.	Rough-Winged Swallow	263
213.	Cedar Waxwing	264
214.	Northern Shrike	265
215.	Loggerhead Shrike	266
216.	Red-Eyed Vireo	268
217.	Yellow-Throated Vireo	270
218.	Blue-Headed Vireo	271
219.	White-Eyed Vireo	272
220.	Black-and-White Warbler	274
221.	Swainson's Warbler	275
222.	Worm-Eating Warbler	276
223.	Bachman's Warbler	277
224.	Blue-Winged Warbler	278
225.	Golden-Winged Warbler	279
226.	Orange-Crowned Warbler	280
227.	Parula Warbler	282
228.	Cape May Warbler	284
229.	Myrtle Warbler	287
230.	Magnolia Warbler	288
231.	Cerulean Warbler	289
232.	Chestnut-Sided Warbler	289
233.	Bay-Breasted Warbler	290
234.	Black-Poll Warbler	291
235.	Blackburnian Warbler	292
236.	Sycamore Warbler	293
237.	Black-Throated Green Warbler	294
238.	Pine Warbler	295
239.	Palm Warbler	296
240.	Yellow Palm Warbler	297
241.	Prairie Warbler	298
242.	Oven-Bird	299
243.	Water Thrush	300
244.	Louisiana Water-Thrush	301
245.	Kentucky Warbler	302

		PAGE
246.	Connecticut Warbler	302
247.	Mourning Warbler	303
248.	Maryland Yellow-Throat	304
249.	Yellow-Breasted Chat	305
250.	Hooded Warbler	306
251.	Wilson's Warbler	307
252.	Pipit	308
253.	Mockingbird	310
254.	Catbird	311
255.	Brown Thrasher	312
256.	Carolina Wren	313
257.	Bewick's Wren	315
258.	House Wren	316
259.	Winter Wren	316
260.	Short-Billed Marsh Wren	317
261.	Long-Billed Marsh Wren	318
262.	Brown Creeper	320
263.	White-Breasted Nuthatch	322
264.	Red-Breasted Nuthatch	322
265.	Tufted Titmouse	324
266.	Carolina Chickadee	325
267.	Golden-Crowned Kinglet	326
268.	Ruby-Crowned Kinglet	327
269.	Blue-Gray Gnatcatcher	328
270.	Wood Thrush	329
271.	Veery	330
272.	Gray-Cheeked Thrush	331
273.	Olive-Backed Thrush	332
274.	Hermit Thrush	333
275.	Bluebird	334

MAP

	Facing Page
Map of North Carolina, showing Life Zones	10

BIRDS OF NORTH CAROLINA

BY

T. GILBERT PEARSON, C. S. BRIMLEY AND H. H. BRIMLEY

ORNITHOLOGICAL HISTORICAL SKETCH

By T. GILBERT PEARSON

The earliest record of an ornithological observation in North Carolina is that of Captain Barlowe, who in company with his associate, Captain Amadas, visited the coast in 1584. Entering the sounds by one of the inlets, they sailed to Roanoke Island and landed. Evidently they climbed one of the tree-covered dunes girding the east side of the island. Captain Barlowe writes: "Under the bank or hill whereon we stood, we beheld valleys replenished with goodly cedar trees, and having discharged our harquebus shot, such a flock of cranes (the most part white) arose under us, with such a cry redoubled by many echoes, as if an army of men had shouted together." Visiting Roanoke Island to-day, one will still see goodly cedar trees, but the Herons, which doubtless were the birds to which he referred, are no longer to be found in such numbers. Three hundred and thirty years of man's destructive influences have written their story large among the bird-life of that interesting region, and the most northerly breeding colony of Herons known to exist in the State is situated on an island in Mattamuskeet Lake, forty-five miles away in a southwesterly direction. The birds here are so few that their united cries would not equal the lusty shout of a corporal's guard, and none of the white varieties are to be seen.

Two years after this, viz., in 1586, Thomas Hariot came to the island and made a list of the birds he found there. Of these he says there were "turkey-cocks and turkey-hens, stock doves, partridges, cranes and herons, and in winter great store of swan and geese. Of all sorts of fowl, I have names in the country language, of four score and six; of which number, besides those that be named, we have taken, eaten, and have the pictures as they were drawn, with names of the inhabitants; of several strange sorts of water fowl eight, and seventeen kinds more of land fowl, although we have seen and eaten many more which for want of leisure there for the purpose could not be pictured; and after we are better furnished and stored upon further discovery with their strange beasts, fish, trees, plants and herbs, they shall be published. There are also parrots, falcons, and merlin-baws, which although with us they be not used for meat, yet for other causes I thought good to mention."

One of the most interesting items in this narration is the reference to "parrots," which establishes the fact without doubt that the Carolina Paroquet at one time inhabited the immediate neighborhood of the coast.

John Lawson, Gentleman, in his *History of North Carolina*, published in London in 1714, devotes fully ten pages to an enumeration of the birds of the State, and a dissertation on the habits and activities of many of them. Many of the

birds that he found here were new to him; but as evidently he was not a trained ornithologist, he failed in many instances to note the difference between them and species of Europe which to his eye they much resembled. To many of our native birds, therefore, he gave the names of English species, and, his descriptions being meager, we are often left in doubt as to what birds he really had in mind. Thus what he calls "Moorehen" may have been either the Gallinule or the Coot. His "Lap-wing" was perhaps one of the plovers, the Golden, Black-bellied, Wilson's or Piping, or may possibly have been the Dowitcher, Turnstone, or Willet.

Among the hawks he speaks of the "Hobbie." I am yet at a loss to understand to what species he referred, as all the other small hawks are evidently accounted for under such English titles as "Falcon," "Merlin," etc.

He made the mistake of regarding the young Bald Eagle as a distinct species, and calls it "Gray Eagle." This error, by the way, was long followed by subsequent observers of North American bird life. Audubon, writing over a hundred years later, tells in much detail about the life history of the Gray Eagle; in fact, he has left us a full-page drawing of the magnificent "Bird of Washington," as he called it. The fact that the young Bald Eagle does not acquire its white head and tail until a lapse of three years will account, in a measure at least, for its mistaken identity.

On the other hand, some of Lawson's statements, which bear on the face evidences of being perfectly truthful, reveal some valuable information. One of these is his account of the breeding of the Black Duck in the eastern marshes, and another which tells of the common occurrence of the Sandhill Crane. These are the only two positive records we have of this character within the borders of North Carolina, for, so far as known, no one else has recorded cranes in the State; and while the Black Duck is a common winter visitor, and has long been suspected of breeding here, we know of no authoritative record of a nest having been found since this account given by Lawson.

In the days of Lawson, Passenger Pigeons, which have since become extinct, were abundant birds in North Carolina. They probably gathered to breed in vast numbers in the mountains, after which they spread over the low country, and, their numbers being augmented by great flights from the north, the pigeon population must have been something enormous. Lawson says: "I saw such prodigious flocks of these pigeons in January and February, 1701-2 (which were in the hilly country between the great nation of the Esaw Indians and the pleasant stream of Sapona, which is the west branch of Clarendon, or Cape Fear River), that they had broken down the limbs of a great many large trees all over those woods, whereon they chanced to sit and roost; especially the great pines, which are more brittle wood than our sorts of oak are. These pigeons, about sunrise, when we were preparing to march on our journey, would fly by us in such vast flocks that they would be near a quarter of an hour before they were all passed by; and as soon as that flock was passed, another would come, and so successively one after another for a greater part of the morning. It is observable that wherever these fowl come in such large numbers, as I saw them then, they clear all before them, scarce leaving one

acorn upon the ground, which would doubtless be a great prejudice to the planters that would seat there, because their swine would be thereby deprived of the mast. When I saw such flocks of the pigeons I now speak of, none of our company had any sort of a shot than that which is cast in moulds, and was so very large that we could not put above ten or a dozen of them into our largest pieces. Wherefore we made but an indifferent hand of shooting them; although we commonly killed a pigeon for every shot. They were very fat and as good pigeons as ever I eat."

While it can hardly be claimed that the writings of John Lawson are of any great ornithological value, they are at least interesting from an historical standpoint, and most assuredly should be included in any bibliographical sketch of North Carolina ornithology.

The work of Col. William Byrd of Westover, Virginia, next may claim attention. It was he who conducted the survey of the boundary line between Virginia and North Carolina. The narrative of his experiences, which we are told was written largely for his own amusement and that of his friends, contains, besides an account of the survey, many side remarks on the inhabitants of the territory which he traversed. His references to natural history are not infrequent, but are for the main part of little moment. The following contribution is on the habits of a bird now extinct in North Carolina: "Very few in this country have the industry to plant orchards, which in a dearth of rum might supply them with much better liquor. The truth is there is one inconvenience that easily discourages lazy people from making this improvement. Very often in autumn when the apples begin to ripen they are visited with numerous flights of paroquets, that bite all the fruit to pieces in a moment for the sake of the kernels. The havoc they make is sometimes so great that whole orchards are laid waste in spite of all the noises that can be made or mawkins that can be dressed up to frighten them away. These ravenous birds visit North Carolina only during the warm season, and so soon as the cold begins to come on, retire back towards the sun. They rarely venture so far north as Virginia, except in a very hot summer, when they visit the most southern parts of it. They are very beautiful, but, like some other pretty creatures, are apt to be loud and mischievous." He does not attempt to catalogue the birds of the country.

The title of Mark Catesby's work, *The Natural History of Carolina, Florida and the Bahama Islands*, published in 1731, would lead one to anticipate finding within its covers some reference to North Carolina birds. A careful reading of its pages, however, reveals the fact that the author in all probability was never within what is now the territory of North Carolina. He went up the Savannah River almost to the mountains, and hunted buffalo with the Indians; later he sailed for Virginia, and, ascending the James River, traveled thence westward to a point almost north of that reached on his trip from Savannah. There seems to be no evidence that he ever saw the intervening territory. This is to be regretted, as Catesby was not only an artist of merit, but for the times must have been a very careful and painstaking naturalist.

Dr. John Brickell published in Dublin, in 1737, a book bearing a comprehensive title as follows: "*The Natural History of North Carolina*, with an account of the trade, manners, and customs of the Christian and Indian inhabitants; illustrated with copperplates, whereon are curiously engraved the map of the country, several strange beasts, birds, fishes, snakes, insects, trees, and plants, etc."

His list of birds follows closely that of Lawson, published some years previously, and the similarity of the text in many instances strongly suggests the idea that he frequently bordered closely on plagiarism.

He enumerates 128 kinds of birds. Five of these, at least, we must eliminate at the start. He makes three eagles out of one, naming, as he does, in addition to the Bald Eagle, the Black Eagle and Gray Eagle, which were simply different phases of the immature bird. We, of course, cannot accept two species of leather-winged bats as birds, and the nightingale, which he mentions, is not found in a wild state in the Western Hemisphere.

Although Dr. Brickell, in his Preface, says, regarding his natural history, "I have been very exact," the reader is not always so impressed. Of the Brown Pelicans he says: "They have an odd kind of note, much like the braying of an ass, and in spring they go into the woods to breed, and return in the autumn," whereas it is a well-known fact that the Pelican is an absolutely silent bird, and in the United States breeds on or near the ocean beaches or on mangrove keys of the Gulf Coast. Of the Cuckoo he writes: "In winter they hide themselves in hollow trees, and their feathers come off, and they are scabby; they usually lay one egg, and that in the nest of the Hedge Sparrow."

This statement reminds one of the story of the naturalist Cuvier, to whom a student stated that a lobster was a red fish which runs backward. Cuvier is reported to have replied: "You are right in all but three things, viz.: It is not red, it is not a fish, and does not run backward." The Carolina Cuckoos do not hide in hollow trees; they do not lose all their feathers at once and become scabby; they lay not one, but from two to four eggs, in a nest of their own construction; and, finally, the Hedge Sparrow is not found in America.

In writing of the Gray Eagles, he discusses at length their interesting characteristics of form and movements. In part he says: "They are great thieves, and live to be very old, and die not from age nor any sickness, but of mere hunger by reason that the upper beak of their bill is so far overgrown and turneth inward so much that they are not able to open it to feed themselves. They seldom seek their prey in the forenoon, for they are found sitting idle and perched upon trees all the morning. It is reported that the quills or feathers of eagles, if laid amongst those of other fowls, will rot and consume them, which I have not faith to believe. The flesh, though scarce fit to be eaten, is medicinal against the gout; the bones of the skull in powder are good against megrim; the brain, drank in wine, helps the jaundice, and the gall is of excellent use in most disorders of the eye, and applied helps the bitings of serpents and scorpions."

Delicious as Brickell's natural-history sketches are, it is probable that he acquired much of his material from the Indians and settlers, and has woven into his narra-

tive many of the traditions and superstitions of the times. Positive statements as to what he actually saw seldom appear; one of these is when, in speaking of the smallness of the Hummingbird, he remarks: "I have frequently seen butterflies chase them away from the flowers."

Another of those early gentlemen who traveled through the South and left his writings for the benefit of posterity was William Bartram, in 1791. His book is entitled *Travels Through North Carolina, South Carolina, Florida, etc.* It seems, however, that he made but one hasty trip through North Carolina. He traveled by land, and, entering the State in Brunswick County, proceeded to Southport, passed from there up the Clarendon (Cape Fear) River to Campbelltown (now Fayetteville), and thence on to Virginia. He speaks briefly of the trees, soil, and rocks, but makes no reference to the wild animal life. Some of his stories are very highly colored. He speaks of the alligators of South Carolina rushing at him with terrible roarings, and states that the steam issuing from their mouths and nostrils threw over him a "hurricane" of water. In reading his writings one is inclined to believe that had he lived to-day some persons might have classed him as a "nature faker."

Passing now from this short sketch regarding the early explorers and natural-history observers, whose writings excite in the modern ornithologist more interest than credibility, we may consider briefly the work of modern bird students.

Apparently the first real ornithologist to visit North Carolina for the purpose of studying the birds was Alexander Wilson, a Scotchman who traveled through the country collecting birds and making drawings of them by day, and playing the flute for profit or diversion at night. Wilson was a field naturalist of the first order, and his far-famed work, *American Ornithology*, illustrated with his own most creditable drawings in colors, has well won for him the title of "Father of American Ornithology," despite the fact that his work was eclipsed some years later by the stupendous undertaking of John James Audubon. As an ornithologist Audubon was Wilson's superior only in that he was a more skillful artist. As a man, Wilson was of humble parentage, but indifferently educated, was poor, retiring, sensitive, and self-effacing. Audubon was of excellent parentage, was highly educated, was always confident, and at times self-assertive. Both were great contributors to the world's knowledge of American birds, and it was their work which aroused real interest in the subject and put in motion the movement for bird study from which has since developed a long line of brilliant American ornithologists.

On one of Wilson's trips through North Carolina, he found a specimen of the largest woodpecker of all eastern North America, the Ivory billed. The bird has probably been extinct for a long time in this State. Another point of interest attending this capture by Wilson is that there is no recorded instance of one ever having been taken farther north in eastern America. His record is therefore interesting and unique. He says:

"The first place I observed this bird at, when on my way to the south, was about 12 miles north of Wilmington, in North Carolina. There I found the bird from which the drawing of the figure in the plate was taken. This bird was only wounded

slightly in the wing, and, on being caught, uttered a loudly reiterated and most piteous note, exactly resembling the violent crying of a young child; which terrified my horse so as nearly to have cost me my life. It was distressing to hear it. I carried it with me in the chair, under cover, to Wilmington. In passing through the streets its affecting cries surprised every one within hearing, particularly the females, who hurried to the doors and windows with looks of alarm and anxiety. I drove on, and on arriving at the piazza of the hotel, where I intended to put up, the landlord came forward, and a number of other persons who happened to be there, all equally alarmed at what they heard; this was greatly increased by my asking whether he could furnish me with accommodations for myself and my baby. The man looked blank and foolish, while the others stared with still greater astonishment. After diverting myself for a minute or two at their expense, I drew my woodpecker from under the cover, and a general laugh took place. I took him upstairs and locked him up in my room, while I went to see my horse taken care of. In less than an hour I returned, and, on opening the door, he set up the same distressing shout, which now appeared to proceed from grief that he had been discovered in his attempts to escape. He had mounted along the side of the window, nearly as high as the ceiling, a little below which he had begun to break through. The bed was covered with large pieces of plaster; the lath was exposed for at least 15 inches square, and a hole, large enough to admit the fist, opened to the weather-boards; so that, in less than another hour he would certainly have succeeded in making his way through. I now tied a string round his leg, and fastening it to the table, again left him. I wished to preserve his life, and had gone off in search of suitable food for him. As I reascended the stairs, I heard him again hard at work, and on entering had the mortification to perceive that he had almost entirely ruined the mahogany table to which he was fastened, and on which he had wreaked his whole vengeance. While engaged in taking the drawing, he cut me severely in several places, and, on the whole, displayed such a noble and unconquerable spirit that I was frequently tempted to restore him to his native wildness. He lived with me nearly three days, but refused all sustenance, and I witnessed his death with regret."

RECENT ORNITHOLOGICAL WORK

What we may term recent ornithological research began in North Carolina in 1871, when Dr. Elliott Coues published in the *Proceedings of the Academy of Natural Sciences*, of Philadelphia (vol. xxiii), a series of notes on the birds observed by him while stationed at Fort Macon in Carteret County. One hundred and twenty-two species of birds are here mentioned.

In 1886 Mr. William Brewster of Cambridge, Massachusetts, studied in the mountains of western North Carolina, and his list of birds, published in *The Auk*, contains records of one hundred and twenty species. The preceding winter Charles Batchelder, also of Cambridge, made a number of observations on the winter bird life of the mountains, and these likewise were published in *The Auk;* one of the discoveries made by Mr. Brewster was the Carolina Snowbird (*Junco hyemalis carolinensis*). J. S. Cairns, an enthusiastic student of birds, living at Weaver-

ville, published the results of his observations in *The Ornithologist and Oölogist* in 1887. He enumerated one hundred and sixty-nine varieties of birds in Buncombe County. It was he who first discovered the Cairns's Warbler.

Messrs. H. H. and C. S. Brimley, of Raleigh, were for many years engaged in collecting birds for scientific purposes. During this time, and since, they have gathered much valuable information on the nesting and migration habits of the birds which occur there and elsewhere in the State. Between 1884 and 1891 they published in *The Ornithologist and Oölogist* seventy-six articles on Raleigh bird life.

Mr. R. B. McLaughlin of Statesville, during 1887–1888, contributed nine articles to the same publication on the birds of the Statesville region.

Dr. Louis B. Bishop of New Haven, Connecticut, for several years was a frequent visitor to Pea Island, in Dare County, and many of his observations have been published from time to time in *The Auk*.

My studies on North Carolina ornithology and oölogy extended over the period of my residence in the State, from 1891 to 1912. Such papers and lists of birds as were published by me are enumerated in the Bibliography, and are based on my observations at Guilford College and Greensboro in Guilford County, at Chapel Hill in Orange County, and from notes made during various trips taken throughout the State.

Additional papers on the bird life of North Carolina by various authors have been published; principally in *The Auk*, *Bird-Lore*, and *The Ornithologist and Oölogist*. An enumeration of the various publications containing matters in reference to North Carolina ornithology will be found in the bibliographical appendix to this volume.

THE STATE AUDUBON SOCIETY

The Audubon Society of North Carolina, for the study and protection of wild birds and animals, was organized in the chapel of the State Normal and Industrial College at Greensboro, March 11, 1902. Abundant evidence existed to show that there was most urgent need for such an organization in the State.

Practically no attention was being given by the State and County authorities to the enforcement of the woefully few and insufficient bird-protective measures that existed. In some sections there were no laws prescribing closed seasons for Quail, Wild Turkey, or Deer. There was scarcely the faintest shadow of a statute extending protection to any song birds, to birds of bright plumage, or to those species which are so valuable as destroyers of insects injurious to crops.

It was illegal to ship Quail from the State, it is true; nevertheless, scores of hunters engaged in the profitable business of buying and openly shipping these birds to markets outside of the State; but if ever a single one of these offenders had been arrested and fined we were never able to locate any record of such a proceeding.

Hunters to the number of at least 3,000 poured into the State from the North each winter, paid the State no license fee for hunting, killed as many Quail and other birds as they chose, and, departing, took with them what spoils they desired.

There exists much indisputable testimony that during those dark days men often filled trunks and boxes with thousands of Quail and, taking them to Northern markets, reaped a golden harvest for their industry. Pot-hunters trapped and netted at will, and sold their catch at the neighboring stores.

In many places men and boys gathered on summer evenings to shoot Nighthawks (Bullbats), often for no other apparent purpose than for the mere pleasure of seeing them fall. These birds are usually particularly abundant about a village infested with mosquitoes, on which they greedily feed, so our citizens were following the short-sighted policy of wantonly killing one of our most useful friends. Men who had no interest in the welfare of our State, other than the money which they could make by destroying our bird life, came from New York and New England, eagerly slaughtered our shore birds in untold numbers, and, packing their bodies in barrels of ice, shipped them to Northern markets.

In our eastern sounds, gulls and many species of beautiful terns have long assembled in summer to lay their eggs and rear their young on the small islands and sandy beaches of that district. Thither went the plume hunters, and season after season butchered these exquisite creatures to get the wings for the New York millinery trade. They always chose the time of year when the birds were collected on their rookeries, well knowing that at that time they are easy to approach. Countless thousands of young, being thus deprived of parental support, were left helpless, to die of starvation.

Beginning about 1882, this barbaric war of extermination was continued each summer until May 1, 1903, when the first Audubon game warden on Pamlico Sound received his appointment.

This outlines very briefly conditions relative to bird killing in North Carolina when the State Audubon Society was formed. That appalling conditions had been allowed to continue unrebuked was due in part to the ignorance of the general public as to what was going on, and more particularly was it due to apathy on the part of our general population. After all, they said, these creatures were nothing but birds, and if any one gained pleasure or profit by killing them, all well and good.

Those of us, therefore, who were interested in the formation of the Audubon Society had certain definite things in mind which we sought to see accomplished. These were:

First. The enactment of a law which would make it absolutely illegal to kill any useful species of bird in North Carolina which was not classed as a game bird.

Second. To secure laws providing reasonable closed seasons for all game birds and game animals in the counties where no laws of this character then existed.

Third. To require every nonresident hunter to pay to the State $10 for a shooting license.

Fourth. To provide for a system of State wardens to enforce these and other game laws.

Fifth. To give the Audubon Society official recognition in its work of seeking to cultivate public sentiment to a better appreciation of the value of conserving the wild life of the State.

On March 6, 1903, the Legislature enacted a law which not only contained these provisions, but many others, notable among which was one that delegated and empowered the State Audubon Society to select game wardens throughout the State to carry into execution the various bird and game protective statutes.

During the year which followed, the Society was much engaged in effecting the organization of this work throughout the State. Copies of the Audubon law were printed in pamphlet form and widely distributed. Digests of the game laws were printed on cloth and nailed to 8,000 trees and buildings along the public highways of the State. Accurate and carefully prepared literature of the value of birds was published and given wide circulation. In all, 76,069 copies of printed information of this character were distributed from the office at Greensboro. In addition, 500 books discussing the habits and activities of wild birds were circulated in the schools and elsewhere. Twenty-nine State game wardens were employed. These spent their time largely in going among the people and pushing the campaign of general education on the subject of the value of birds to the State. They also did work of a sterner character. Twenty-two shipments of Grouse and Quail, which were being smuggled to northern markets, were seized, and thirty-one successful prosecutions for violations of the game laws were conducted in the courts.

During the years that followed, the same line of work was continued with increasing scope and efficiency. In 1905, 45 wardens were employed, and in spite of great indifference, and in many instances a most bitter opposition, 66 game-law violators were convicted of crime. In 1906 there were 44 wardens and 84 convictions; in 1907, 62 wardens and 68 convictions; in 1908, 79 wardens and 245 convictions; in 1909, 100 wardens and 163 convictions.

It should be borne in mind that these men were not working on salaries, but served largely for the love of the cause. With few exceptions, it was impossible to pay them more than small fees, or a *per diem* for the time actually employed in conducting specific work under the direction of the secretary. The resources of the Society have never been sufficient to do otherwise. All money collected by fines goes, by law, to the school fund, so the Society has had to depend entirely upon the support of people who are enough interested in its work to give it their support and the funds raised by the sale of licenses that are bought by nonresident hunters. The financial assistance of the members has been generous, and more than sufficient to pay the expenses and moderate salary of the executive officer, so that none of the license fund has been used for that purpose.

The State of North Carolina has never appropriated any funds for the support of this work; hence it may be seen that whatever has been accomplished by the Audubon Society of North Carolina, in the enforcement of the law, in the securing of more adequate statutes, or in the cultivating of public sentiment, has been done without the taxpayer, or the resident hunter, or in fact any North Carolinian, ever having been required to contribute a cent to the work.

Much remains to be done in the line of bird-law and game-law enforcement in the State. It is well known among game protectors throughout the United States that North Carolina has fallen sadly behind most other States in the matter of

game protection in recent years, and that by so doing she is jeopardizing her future bird life, which indeed means the giving of hostages to fortune.

In bringing these remarks to a close, we wish to express our profound appreciation for the splendid services rendered to the cause of wild-life protection in North Carolina by Dr. R. H. Lewis, who, as president of the State Audubon Society from 1903 until the present time, has always given the various phases of the Audubon work his most carefully considered advice and support, and without whose encouragement and coöperation this book could not have been prepared and offered for publication to the State Geological and Economic Survey.

LIFE ZONES AND BIRD DISTRIBUTION

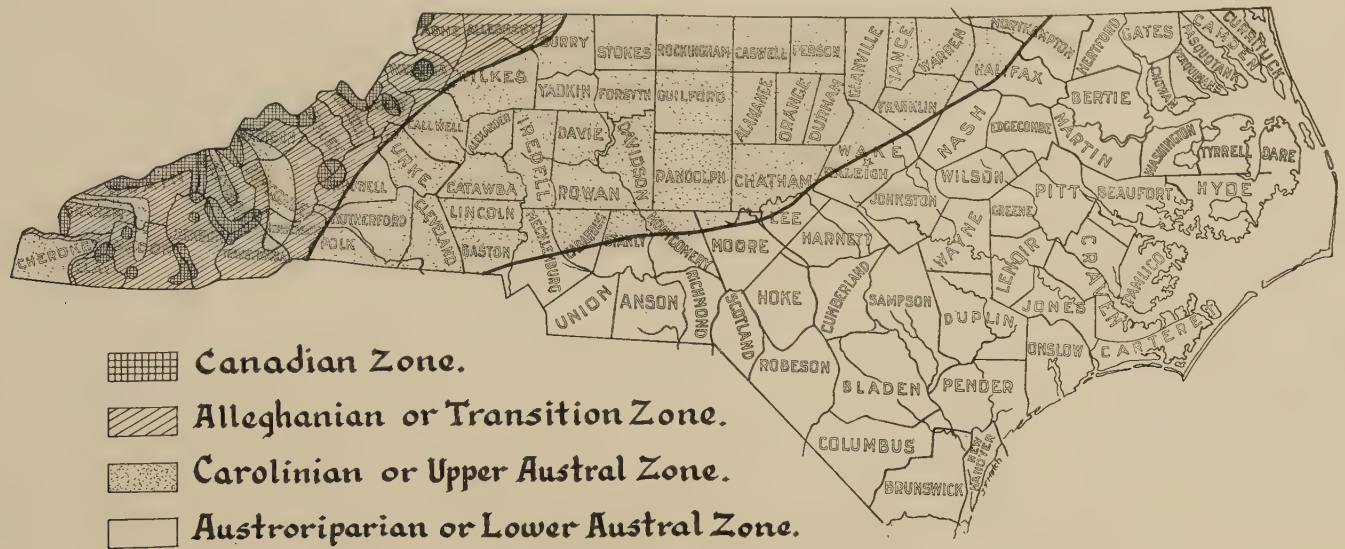
By C. S. BRIMLEY

The natural distribution of wild animal life as it appears on the globe is primarily dependent on climatic conditions. After extended studies in this interesting field of research, well recognized areas, known technically as "regions," "zones," and "faunas," have been described by scientists as being inhabited each by its characteristic life. Without attempting even to outline the data upon which these divisions have been based, we will merely name the four life zones represented in North Carolina, and call attention to some of the species of birds by which they are inhabited. (For further study of the general aspects of this subject, students are referred to the writings of Merriam, Bailey, and Nelson, published by the Biological Survey of the United States Department of Agriculture.)

In North Carolina the Canadian Zone occupies only the tops of the higher mountains; the Alleghanian or Transition includes those portions of the mountain region between 2,500 and 4,500 feet of elevation; the Carolinian or Upper Austral covers the central region of the State and the lower mountain valleys; and the Lower Austral or Austro-riparian extends over the eastern and southeastern portions of the State. Each of these life zones is characterized by the presence of certain birds during the breeding season, as well as by characteristic mammals, reptiles, and amphibians.

The Canadian Zone. This is the most northern of the life zones that enter North Carolina, where it occupies only the tops of the higher mountains, above 4,000 or 4,500 feet elevation. The following are birds which in the breeding season are found in this zone and not elsewhere in the State: Golden-crowned Kinglet, Red-breasted Nuthatch, Black-capped Chickadee, Brown Creeper, Winter Wren, Pine Siskin, Crossbill, Raven, Hairy Woodpecker, Downy Woodpecker, and Golden Eagle. The Carolina Junco is found in this zone and also in higher portions of the Alleghanian.

The Alleghanian or Transition Zone includes that portion of the mountain region below 4,000 or 4,500 feet and above about 2,500 feet elevation. The principal characteristic breeding birds in this region are as follows: Wilson's Thrush, Bewick's Wren, Cairns's Warbler, Black-throated Green Warbler, Chestnut-sided Warbler, Blackburnian Warbler, Golden-winged Warbler, Canadian Warbler,



Map of North Carolina Showing Life Zones.

Warbling Vireo, Scarlet Tanager, Song Sparrow, Vesper Sparrow, Baltimore Oriole, Rose-breasted Grosbeak, Least Flycatcher, Olive-sided Flycatcher, Yellow-bellied Sapsucker, and Ruffed Grouse.

The following birds enter the Alleghanian Zone from the Carolinian, but do not extend beyond it into the Canadian: Carolina Wren, Carolina Chickadee, Worm-eating Warbler, Kentucky Warbler, Louisiana Water-thrush, Hooded Warbler, Southern Downy Woodpecker, and Southern Hairy Woodpecker.

The Carolinian or Upper Austral Zone. This zone occupies the mountain valleys below about 2,500 feet of elevation, and the greater part of the central region of the State, its eastern and southeastern limit being roughly a line drawn from Weldon to Raleigh, thence to Charlotte and on to Tryon in Polk County.

The birds that enter this zone from the Lower Austral, but do not extend beyond it into the Alleghanian, are: Brown-headed Nuthatch, Mockingbird, Yellow-throated Warbler, Pine Warbler, Prairie Warbler, Summer Tanager, Bachman's Sparrow, Blue Grosbeak, Orchard Oriole, and Black Vulture.

The following birds do not range below it into the Lower Austral, though they do range upward into the Alleghanian: Yellow Warbler, Redstart, Goldfinch, and Whip-poor-will.

Lower Austral or Austro-riparian Zone is perhaps the most sharply distinguished of the zones in this State, and as regards birds it divides naturally into a coastal strip and an inland portion. Its upper limit is formed by the lower boundary of the Upper Austral defined above. Few land birds occur in the whole of this region that do not also enter the Carolinian Zone above, several birds usually considered as typically Lower Austral, such as the Bachman's Sparrow, Blue Grosbeak, Brown-headed Nuthatch, Black Vulture, and Yellow-throated Warbler, ranging in this State also throughout the Carolinian Zone. The most characteristic land birds of this zone are the Chuck-wills-widow, Nonpareil, Swainson's Warbler, Prothonotary Warbler, and Red-cockaded Woodpecker.

Typical aquatic and salt-marsh summer birds that characterize the coastal region of this zone are Marian's Marsh Wren, Boat-tailed Grackle, Fish Crow, Osprey, Oystercatcher, Piping Plover, Willet, Clapper Rail, Louisiana Heron, Egret, Snowy Egret, Little Blue Heron, Water Turkey, Florida Cormorant, and Black Skimmer.

In general, these life zones correspond to a considerable extent with the natural divisions of the State, the Lower Austral covering the coastal plain and the pine barrens, the upper Austral the Piedmont plateau, and the Alleghanian and Canadian the mountain regions.

There are no sharply marked divisions between these zones; they gradually pass into one another and, similarly, the birds named as being characteristic of them are by no means all equally so; for instance, the Nonpareil is confined to the southeastern corner of the State and the immediate neighborhood of the ocean. A noticeable peculiarity in reference to the distribution of a few species is that, probably owing to the humidity of the coastal region, they are found breeding near the coast, and also in the mountains, but not in the intervening territory. Examples of these are the Black-throated Green Warbler, Song Sparrow, and Barn Swallow.

Seasonal Distribution. As every one who observes birds closely is aware, many forms do not occur in a given locality at all seasons of the year. For convenience, therefore, it is usual to group birds as residents, summer visitors, winter visitors, transients, and stragglers.

As residents, reference is made to those birds which are found throughout the year, familiar examples in most parts of the State being the Turkey Vulture, Carolina Wren, English Sparrow, and Mourning Dove. We should bear in mind, however, that resident birds may be resident as to species, yet not as to individuals. The Robins, for example, which are with us in winter, leave in spring for their summer homes farther north, and their places are taken by breeding birds which have wintered south of the State.

Summer visitors occur only in summer, the term being confined mainly to birds which rear their young in the State—as, for example, the Catbird, Kingbird, and Purple Martin—but depart in autumn.

The name winter visitor applies to birds which come to this State to dwell during the colder months. Common examples are the White-throated Sparrow, Marsh Hawk, Junco, and many kinds of ducks.

Transients are strictly birds of passage, and appear only in spring or fall. Most of them appear at both seasons, but a few are found only in spring and others exclusively in autumn. Many which are transient in the central or eastern portion of the State are summer visitors in the mountains. Among these are the Scarlet Tanager, Baltimore Oriole, and various warblers.

A straggler is a bird which has wandered from its usual home. Among such as have been recorded in the following pages will be found the Man-o'-war Bird, White Ibis and Ani.

The student should bear in mind, therefore, that the bird population of any given territory is constantly changing; in fact, a little field work will reveal to an observer the interesting fact that in no two months of the year is the bird life of a region quite the same.

EXPLANATION OF KEYS AND DESCRIPTIONS

The artificial keys to the orders, families, genera, and species given in the following pages are for North Carolina birds only, and apply principally to adult males, the females and immature birds being included only when the distinguishing characteristics of size and color sufficiently approach those of the male to render this possible. Furthermore, when a marked change of plumage occurs during the year the appearance of the bird in the spring, or breeding season, is the one to which reference is made. A series of keys sufficient to take account of the various plumages which different species assume throughout the year would be so voluminous and intricate as to be of little real service to the student. In practice, however, it will be found of little difficulty to determine the order and family to which any bird belongs; in fact, many females which are very dissimilar to the male may be traced to their respective genera, after which a little examination of the careful description given under the specific names will soon render identification complete and satisfactory.

To the student who has had little or no experience in the use of keys of this character, the following explanation of their use may be of assistance.

Take, for example, the key to the genera of the swallow family, which is as follows:

1. Color of upperparts brown. See 2.
1. Color of upperparts more or less blue or blue-green. See 3.
2. Outer web of outer primary with stiff recurved hooks. *Stelgidopteryx.*
2. Outer web of primary without recurved hooks. *Riparia.*
3. Tail forked for more than half its length. *Hirundo.*
3. Tail not forked for more than half its length. See 4.
4. Length more than 7 inches. *Progne.*
4. Length less than 7 inches. See 5.
5. Throat white. *Iridoprocne.*
5. Throat chestnut. *Petrochelidon.*

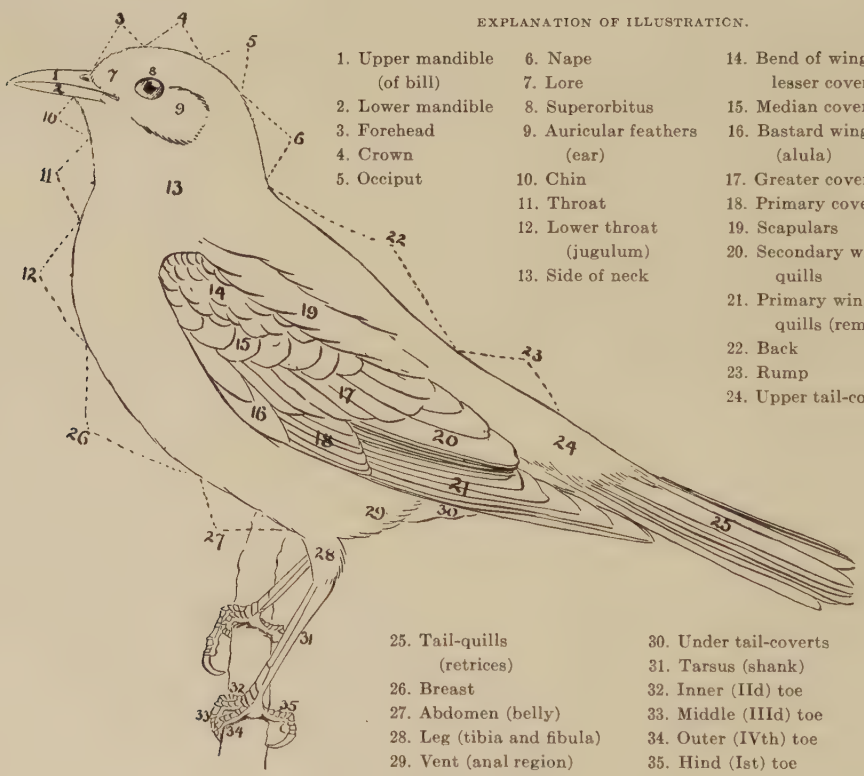
Suppose, now, we have a specimen of the common Purple Martin, and wish to identify it by the key. We look at the two branches of "1," and the color being more or less blue, and not brown, it falls under the second branch, which refers to "3." As the tail is only slightly forked, it falls under the second division of "3," which refers us to "4," and, the length being over 7 inches, it comes under the first division of "4," which tells us that the genus should be *Progne*. We then turn over to where the genus *Progne* is mentioned, and find that only one species of the genus *Progne*, namely, the Purple Martin (*Progne subis*), occurs in the State; hence this must be our bird.

If we had a Barn Swallow, it would "key" down the same way until we reached "3," where the deeply forked tail would put it in the first division of "3" and indicate that it belonged to *Hirundo*. A Rough-winged Swallow, on the other hand,

would, by its brown color, fall under the first division of "1," which would refer us to "2," where the rough edge of the outermost wing quill would put it in the first section and tell us it belonged to *Stelgidopteryx*.

Following the description of each species, the range or territory over which it occurs is given in all cases. Usually, however, reference is made only to the territory it occupies in eastern North America, for we should bear in mind that some birds are as common perhaps in Europe or Asia as in America. For our purposes, however, it has not been thought necessary to go into an exhaustive enumeration of all the foreign countries in which each particular North Carolina species is found.

Measurements.—In the description of the birds given in this volume the word "length" (L.) refers to the distance from the tip of the bill to the tip of tail. "Length of wing" (W.) has reference to the distance from the last bend of the wing to the tip of the longest wing-feather. The meaning of the other measurements will be apparent to the student.



TOPOGRAPHY OF A BIRD.

KEY TO THE ORDERS

1. Swimmers. Feet palmate (full-webbed), or lobate; in the latter case with the claws broad, flat, and nail-like. See 2.

1. Feet not palmate (except in a few waders with very long legs), and never with the claws broad, flat, or nail-like. See 6.

2. Hind toe connected by web with the inner one of the front toes, the front toes also well webbed. *Steganopodes*—Gannets, Cormorants, Pelicans, etc.
2. Hind toe not connected with the front ones by web. See 3.
3. Bill lamellate, its cutting edges fringed or serrated. *Anseres*—Ducks, Geese, and Swans.
3. Bill not lamellate. See 4.
4. Legs inserted far behind middle of the body, which in a standing position is nearly upright. *Pygopodes*—Grebes, Loons, and Auks.
4. Legs inserted about the middle of the body, which in standing position is nearly horizontal. See 5.
5. Nostrils tubular. *Tubinares*—Albatrosses, Petrels, and Fulmars.
5. Nostrils not tubular. *Longipennes*—Jaegers, Gulls, and Terns.
6. Waders. Tibia more or less naked below, the tarsus more or less elongate. See 7.
6. Land Birds. Tibia usually entirely feathered, tarsus of moderate length. See 9.
7. Hind toe well developed, and usually inserted on same level as rest; the loral or orbital regions, or both, sometimes the whole head, bare of feathers. *Herodiones*—Herons, Storks, and Ibises.
7. Hind toe, if present, small and inserted above level of rest; or, if not, length of bird less than 36 inches. Loral and orbital regions feathered, and middle claw not pectinate. See 8.
8. Length of bird 24 inches or less; hind toe, if present, short and elevated. *Limicolæ*—Phalaropes, Snipes, and Plovers.
8. If length of bird is less than 36 inches, the hind toe is inserted on same level as the rest; if over 36 inches in length, the hind toe is short and elevated. *Paludicolæ*—Cranes, Rails, and Gallinules.
9. Bill strongly hooked, with a distinct cere at base. See 10.
9. Bill not strongly hooked, or, if so, without a naked cere at base of upper mandible. See 11.
10. Toes three in front, one behind, the outer toe sometimes reversible. *Raptores*—Vultures, Hawks, and Owls.
10. Toes two in front, two behind. *Psittaci*—Parrots.
11. Hind toe short, decidedly elevated; toes webbed at base; no soft skin about nostrils. *Gallinæ*—Turkeys, Grouse, and Bob-whites.
11. Hind toe on about the same level as rest. See 12.
12. Nostrils opening beneath a soft, swollen, cere-like membrane. Hind claw short. *Columbæ*—Pigeons and Doves.
12. Nostrils not opening beneath a swollen membrane or cere. See 13.
13. Tail feathers stiff and pointed; bill chisel-like and front toes two only. *Pici*—Woodpeckers.
13. Not with the preceding combination of characters. See 14.
14. Toes two in front, or else outer and middle toes connected for half their length. Gape not deep. Tail-feathers soft. *Coccyges*—Cuckoos, Kingfishers, etc.

14. Toes not as in preceding group. See 15.
15. Hind claw not longer than the others; wings very long and gape very wide and deep; or else secondaries only six, and bill very long and slender. Tail-feathers ten. *Machrochires*—Goatsuckers, Swifts, and Hummingbirds.
15. Hind claw at least as long as the others; secondaries more than six, tail-feathers 12. *Passeres*—Perching Birds: Flycatchers, Blackbirds, Jays, Orioles, Sparrows, Finches, Swallows, Vireos, Warblers, Wrens, Thrushes, and most other song-birds.

A DESCRIPTIVE LIST

OF

NORTH CAROLINA BIRDS

I. ORDER PYGOPODES. DIVING BIRDS

This order contains three families of strictly aquatic birds. They possess the peculiarity of having the legs set unusually far back, so that those species which are able to walk can do so only with the body in an upright position.

KEY TO FAMILIES

1. Stiff tail-feathers wanting; front toes lobed, and nails broad and flat. The Grebes (*Colymbidæ*).
1. Tail-feathers present.
2. Hind toe present. The Loons (*Gaviidæ*).
2. Hind toe absent. The Auks (*Alcidæ*).

1. FAMILY COLYMBIDÆ. GREBES

Of the six species of grebes in North America, three are found in North Carolina. They frequent both salt and fresh water areas. All are wonderful divers, and their stout lobe-footed legs serve them well in their submarine flights. With marvelous quickness they dive at the flash of the fowler's gun, often escaping injury by this means. Their food is composed of a wide variety of animal forms which the birds procure by swimming under water. The thick satiny feathers of the breast and sides of certain species have been much used for millinery purposes.

KEY TO GENERA

1. Bill slender, straight, rather acute, its length more than twice its depth at base. *Colymbus.*
1. Bill stout, somewhat hooked; length not twice its greatest depth. *Podilymbus.*

Genus Colymbus (Linn.)

KEY TO SPECIES

1. Bill as long as head. Wing more than 7 inches. *Holbœll's Grebe.*
1. Bill much shorter than head. Wing less than 6 inches. *Horned Grebe.*

1. Colymbus holbœllii (*Reinh.*). HOLBŒLL'S GREBE.

Description: Ads. in summer.*—Top of head, small crest, and back of neck, glossy black; back blackish; throat and sides of head silvery white; front and sides of neck rufous, changing gradually over breast into silvery white belly; sides tinged with rufous. *Ads. in winter.*—Upperparts blackish brown; throat and underparts whitish; front and sides of neck pale rufous. *Im.*—Upperparts blackish; throat and underparts silvery white; neck and sides grayish. L., 19.00; W., 7.50; Tar., 2.20; B., 1.90. (Chap., *Birds of E. N. A.*)

*In the technical descriptions the following abbreviations are used: *Ads.*, adults; *Im.*, immature; *L.*, length (see page 21); *W.*, wing; *T.*, tail; *Tar.*, tarsus; *B.*, bill. Measurements are in inches and hundredths of an inch.

Range.—North America and Eastern Asia; breeding from the extreme northern United States northward; winters from Maine to North Carolina.
Range in North Carolina.—Coastal region in winter; occasionally inland.

Holbœll's Grebe is a winter resident as far south as South Carolina. It is most commonly met with along the coast, although it is said to occur inland sometimes during the spring migration. When alarmed it frequently swims with the body submerged. It may readily be distinguished from the loons by its smaller size, except in the case of the Red-throated Loon, from which it can be told in flight by the conspicuous white patch on the wings. Fishermen report that these birds are frequently caught in shad nets in the Neuse River below New Bern. Specimens were exhibited in the flesh at the New Bern Fair in 1892 and 1893 (H. H. Brimley). Other records of its occurrence are those of Coues at Fort Macon in 1871, and at Chapel Hill, where one was taken by J. J. Dunlap in 1877.

FIG. 1. HOLBŒLL'S GREBE. Winter Plumage.

Two specimens in the flesh, both males, were received at the State Museum on March 12, 1912. They were sent by Jesse Benjamin Etheridge of Manteo, Dare County, who writes under date of March 9: "They were taken from a pound net to-day near Roanoke Island. They are very rare in this section."

2. Colymbus auritus (*Linn.*). HORNED GREBE.

Description: Ads. in summer.—Top of head, hindneck, and throat, glossy blackish; lores pale chestnut; stripe, and plumes behind eye, buffy ochraceous, deeper posteriorly; back and wings blackish; secondaries white; foreneck, upper breast and sides chestnut; lower breast and belly white. *Ads. in winter and Im.*—Upperparts grayish black; underparts silvery white, sometimes washed with grayish on the throat and breast; white of cheeks nearly meeting on hindneck. L., 13.50; W., 5.40; Tar., 1.75; B., .90.
Remarks.—Differs from *P. podiceps.* in more pointed bill, more white in wing, and in winter has no brown below. (Chap., *Birds of E. N. A.*)
Range.—Northern part of Northern Hemisphere; breeds from northern tier of States northward; winters from Maine to Florida.
Range in North Carolina.—Coastal region in winter, common. Occasionally inland.

These interesting birds are abundant winter residents in the bays and sounds of our southern coast. They feed often within a few hundred yards of shore, and, while not associating regularly in flocks, as many as several hundred may sometimes be counted within sight at one time. When not distrubed, they readily become tame and will approach within a few feet of a boat at anchor or pass be-

HORNED GREBE. Colymbus auritus (Linn.) Male and Female.

neath the pier on which one may be standing. This bird is often called Water Witch. During April and May, Horned Grebes are also found on bodies of fresh water where they have paused for food and rest while journeying to their breeding grounds. Records of their occurrence inland are: Asheville, 1891 (Cairns); Greensboro, April, 1902, and Mecklenburg County, November 1, 1908 (Pearson).

Genus Podilymbus (Less.)

3. Podilymbus podiceps (*Linn.*). PIED-BILLED GREBE.

Description: Ads. in summer.—Upperparts glossy, brownish black; throat black; upper breast, front and sides of neck, and sides of body, washed with brownish and indistinctly mottled with blackish; lower breast and belly white; a black band across bill. *Ads. in winter and Im.*—Much like the above, but throat white and no black band on bill. L., 13.50; W. 5.10; Tar., 1.45; B., .85. (Chap., *Birds of E. N. A.*)

FIG. 2. PIED-BILLED GREBE.

Range.—North and South America, breeding throughout its range, but often rare or local. Winters from Virginia southward.

Range in North Carolina.—Whole State, probably at all seasons in suitable situations; known to breed at Lake Ellis in Craven County.

Our data regarding the occurrence of the Pied-billed Grebe, commonly known as the Didapper, or Hell-diver, are rather meager, but are sufficient to warrant the conclusion that it is likely to appear in any part of the State at any season of the year.

As with all grebes, the wings of this bird are remarkably small for the weight they have to carry. Seldom does it resort to flight when alarmed. At times it will sink slowly beneath the surface until only the bill is visible; again, springing forward, it will dive with astonishing quickness. On such occasions it often swims for a considerable distance until the necessity for air drives it to the surface. Owing to the position of the legs, placed almost at the extreme end of the body, walking becomes a laborious task, and is an exercise in which the bird rarely indulges. Specimens have been recorded from Raleigh, Lake Ellis, White Lake, Chapel Hill, Guilford College, Weaverville, Highlands, and Greensboro. H. H. Brimley saw three on Lake Ellis, in Craven County, early in June, 1905, and Pearson repeatedly heard its call issuing from the reeds and lily-pads on that lake in June, 1898. On June 18, 1909, H. H. Brimley, Bowdish, and others of their party found on Lake Ellis three Grebes' nests that contained eggs; five eggs were found in two of these, and six in the third. Other nests, but no eggs, were found on the same waters in May, 1911.

The nest is a mass of reeds and water-soaked decaying vegetable matter, usually floating and attached to growing reeds. The eggs number from four to eight, and are dull white, and usually much soiled. Size about 1.75 x 1.20.

2. FAMILY GAVIIDÆ. LOONS

The family of loons is represented in our territory by one genus, *Gavia*, composed of two species, which are quite the equal of the grebes in the matter of swimming and diving. They rarely visit the land except for the purpose of nidification; in fact, they are almost helpless when on shore, and move with the greatest difficulty. Their food consists largely of fish, which they procure by diving and pursuing under water.

Genus Gavia (J. R. Forst.)

KEY TO SPECIES

Two species occur within the State, which may be distinguished as follows:

1. Wing 13 inches or more. *Loon.*
1. Wing 11.5 inches or less. *Red-throated Loon.*

4. Gavia immer (*Brünn.*). LOON.

Description: Ads. in summer.—Upperparts, wings, tail, and neck black with bluish or greenish reflections; spaces on the throat and sides of neck streaked with white; back and wings spotted and barred with white; breast and belly white; sides and a band at base of under tail-coverts black spotted with white. *Ads. in winter and Im.*—Upperparts, wings, and tail blackish *margined* with grayish, not *spotted* with white; underparts white; throat sometimes washed with grayish. L., 32.00; W., 14.00; Tar., 3.40; B., 2.80. (Chap., *Birds of E. N. A.*)

Range.—Northern part of Northern Hemisphere, breeding in America from northern United States northward, wintering from southern New England to Florida.

Range in North Carolina.—Coastal region in winter; occasional inland.

"The Loon, or Great Northern Diver, is a large, heavy bird with long stout neck and strong sharp beak. In bulk it is the equal of a fair-sized goose (Fig. 3), and many specimens are fully three feet long. On land it is almost helpless, and in fact appears incapable of rising except from a large sheet of water, along the surface of which it can patter a distance before finally swinging clear. In the spring and summer plumage the white-fluted collar, with its upright lines of black spots, forms a beautiful and conspicuous part of its attire.

"The summer home of the Loon is on the clear northern lakes. In winter it is common along the southern coast, and wherever found its presence is known to the inhabitants—War Loon, the fishermen often call it. Although striking in appearance, it would hardly have won its place in poetry and legend but for its cry, which is one of the wildest notes in all nature. Loud and far-reaching, it comes ringing across the water to one's ears with startling effect. There is, too, a quality of unspeakable sadness in the notes, suggestive of heart-breaking anguish.

"While the writer was lying at anchor on the great Pamlico Sound in a heavy fog early one morning, a Loon suddenly emerged from the water but a few rods distant. His figure, distended by the fog, seemed immense. Surprised by the proximity of the silent, phantom-like vessel, the bird, ere it plunged again into the

deep, burst into a prolonged shout like a peal of coarse, profane laughter. The effect was most startling, and although the bird is exceedingly sagacious in avoiding its enemies, the observer might well feel that, judging from its cry, this weird creature is in reality a maniac.

"Loons are often killed for food. Many are annually shot from the dunes near Cape Lookout, as they pass northward in the spring. This bird is a common winter resident in Pamlico Sound, and along the coast generally, except in Albemarle

Fig. 3. Common Loon; Great Northern Diver (Spring Plumage).

Sound, where, possibly, the black character of the water interferes with its vision while diving. Sometimes the Loon is driven to earth far inland by stress of weather. On such occasions it seems unable to rise, and is easily captured. The following records have been made of its occurrence inland: Harnett County, December 9, 1896; Raleigh, April 13, 1897, and November 17, 1897; Guilford College, April, 1896; and Greensboro, April 19, 1900.—Pearson.

5. Gavia stellata (*Pont.*). Red-throated Loon.

Ads. in summer.—Back, wings, and tail fuscous, more or less spotted with white; head and neck ashy gray; *foreneck chestnut;* back of neck black, streaked with white; breast and belly white; longer under tail-coverts and band at the base of shorter ones fuscous. *Ads. in winter, and Im.*—Similar to *G. Immer,* but back *spotted* with white. L., 25.00; W., 11.00; Tar., 2.60; B., 2.00. (Chap., *Birds of E. N. A.*)

Range.—Northern part of Northern Hemisphere, breeding mainly in the Arctic regions; winters from Main to Florida

Range in North Carolina.—Coastal region in winter.

The Red-throated Loon occurs on the Atlantic coast locally in autumn, winter, and spring as far south as South Carolina. Although the average specimen (Fig. 4) is decidedly smaller than is the Common Loon, the birds are not readily distinguished at a distance while in their winter plumage.

FIG. 4. RED-THROATED LOON (Spring Plumage).

H. H. Brimley reported this one as common on Neuse River in January, 1885. Two specimens were procured at New Bern in March, 1892, by Pearson. Bishop secured one at Pea Island, March 3, 1907. Adickes found the species common at Cape Lookout in February, 1909, at which time he collected several specimens.

3. FAMILY ALCIDÆ. AUKS, MURRES, AND PUFFINS

About thirty species are represented in this family. They are all birds of the northern regions, and pass their time on the sea except when they gather, often in great numbers, to rear their young upon the cliffs of rocky islands. They secure their food of fish, crustacea, and other aquatic animal-life, from the ocean, employing both wings and feet to aid them in their submarine journeys. Stragglers representing three genera, each with a single species, have been taken on our coast.

These three genera, together with two others, members of which may be found to occur in the State, may be distinguished by the following characteristics:

KEY TO GENERA

1. Inner claw much larger and more curved than the others; corners of mouth with a rosette of thick naked skin; bill greatly compressed, almost as deep as long. *Fratercula.*
1. Inner claw similar in size and form to the others; no rosette at corner of mouth. See 2.
2. Bill very short and broad, the angle of chin nearer to tip of bill than to nostril; culmen curved. *Alle.*

2. Bill not very short, the angle of chin much nearer to nostril than to tip of bill. See 3.
3. Nostril exposed, overhung by a horny scale. *Cepphus.*
3. Nostril more or less completely concealed by dense velvety feathers. See 4.
4. Bill narrow; tail rounded, the feathers not pointed. *Uria.*
4. Bill very deep, much compressed, one or both mandibles grooved in adult. Tail graduated, its feathers pointed. *Alca.*

One species of the genus *Fratercula*, the Puffin, *F. artica* (*Linn.*), is known to wander as far south as Delaware Bay, and hence is mentioned here. It may be known by the high bill, decorated by transverse ridges.

One species of the genus *Cepphus*, the Black Guillemot, *C. grylle* (*Linn.*), sometimes appears in New Jersey in winter. It has pure white underparts, varied above with black. The black wings have each a large white patch, and the greater wing-coverts are black for at least their basal half. It may possibly be found off our shores in severe winters.

Genus Uria (Briss.)

KEY TO SPECIES

One species of this genus has been taken as a straggler on our coast, and another seems just as likely to occur. The two may be distinguished as follows:

1. Depth of bill at angle of mouth less than ⅓ culmen. Basal portion of cutting edge of upper mandible always dusky or similar in color to rest of mandible. *Murre.*
1. Depth of bill at angle more than ⅓ culmen. Basal portion of cutting edge of upper mandible thickened and conspicuously light colored in adult. *Brünnich's Murre.*

6. Uria lomvia lomvia (*Linn.*). BRÜNNICH'S MURRE.

Ads. in summer.—Upperparts, wings, and tail sooty black; foreneck somewhat browner; tips of secondaries, breast and belly white; base of upper mandible greenish, rounded outward beyond edge of lower mandible. L., 16.50; W., 8.40; Tar., 1.30; B., 1.25; depth of B. at nostril .47.

Remarks.—Adults are to be distinguished from adults of *U. t. troile* by the darker color of the head, which in *lomvia* is darker than the throat, by the size of the bill and thickening of its cutting edge at the base. Winter and immature birds can be distinguished from those of *U. t. troile* only by the size of the bill, which, as the measurements show, is longer in that species. (Chap., *Birds of E. N. A.*)

Range.—Breeds on the coasts and islands of the North Atlantic from Gulf of St. Lawrence northward. Casually in winter to South Carolina.

Range in North Carolina.—Two specimens taken on the coast in winter.

This is a bird of the open northern seas, and its occurrence in the South must be considered very rare. Pearson procured one in the flesh at New Bern, Craven County, which was said to have been killed on Neuse River, December 22 or 23, 1896. The mounted skin is preserved in the museum at Guilford College. William S. Post, of New York, writes that he received one in the flesh from Currituck Sound, January 3, 1901.

Genus Alca (Linn.)

7. Alca torda (*Linn.*). RAZOR-BILLED AUK.

Ads. in summer.—Upperparts, wings and tail sooty black; foreneck somewhat browner; tips of secondaries, a line from eye to bill, breast, and belly white; bill black, crossed by a white band. *Ads. in winter.*—Similar, but with sides and front of neck white. *Im.*—Similar to adult in winter, but with bill smaller and without white bar. L., 16.50; W., 7.90; Tar., 1.35; B., 1.25. (Chap., *Birds of E. N. A.*)

Range.—North Atlantic, breeds from Greenland to New Brunswick, winters from the latter place to Long Island and casually to North Carolina.

Range in North Carolina.—Taken in winter of 1890 off Cape Lookout.

A razor-billed Auk was taken at Cape Lookout, North Carolina, by Lieutenant Foley, U. S. N., February 15, 1890 (*Auk*, 1890, vol. 7, p. 189, Merriam). Two other specimens were killed about the same date by Augustine Piner, a taxidermist at Morehead, and for years remained unidentified in his collection. They were discovered and purchased by Pearson in July, 1898. (*Auk*, 1899, vol. 16, p. 242.)

Genus Alle (Linn.)

8. Alle alle (*Linn.*). DOVEKIE.

FIG. 5. DOVEKIE.

Ads. in summer.—Upperparts, wings and tail sooty black; sides and front of neck and upper breast somewhat browner; secondaries tipped and scapulars streaked with white; lower breast and belly white. *Ads. in winter, and Im.*—Similar, but throat whiter or washed with dusky and sometimes a gray collar on nape. L., 8.00; W., 4.50; Tar., .70; B., .50. (Chap., *Birds of E. N. A.*)

Range.—North Atlantic, breeding in the arctic regions; it winters from Greenland to Long Island, and casually to North Carolina.

Range in North Carolina.—Coastal region rarely in winter.

The Dovekie lives well out at sea and is seldom seen near land except when blown in by severe gales. There are but few records of its occurrence in North Carolina. One taken in Currituck Sound in 1901 or 1902 is preserved in the collection of the

Narrows Island Shooting Club. On December 31, 1902, Pearson found a live specimen lying helpless on the beach near the surf 31 miles north of Cape Hatteras. It had recently lost one of its feet, perhaps by the bite of some fish. It was much emaciated, and died within a few hours. The mounted skin is now in the museum of the State Normal and Industrial College at Greensboro. A live male was found on the beach at Pea Island by J. B. Etheridge, January 11, 1905. (Bishop.) A fourth record is from Currituck Sound, where a live male was picked up on the beach near the Currituck Shooting Club, January 20, 1905, and sent in the flesh to J. E. Thayer (*Auk*, July, 1905, p. 289). Early in the year 1909 several were noted at Beaufort; two of these, taken on February 1, were secured by J. E. Thayer. Two others, killed February 15 and 24 respectively, were received in the flesh by Pearson, who forwarded them to the State Museum. Later reports, substantiated by specimens, showed them to have been quite common in the region of Cape Lookout that winter. Flocks were seen and numbers of the birds in helpless condition were washed ashore in the bight of the Cape.

II. ORDER LONGIPENNES. LONG-WINGED SWIMMERS

These are water birds possessing great power of flight. They are chiefly maritime, except when nesting. Unlike the ducks and diving birds, which sit low in the water, birds of this order ride lightly on the waves. Three families are represented in North Carolina.

KEY TO FAMILIES

1. Lower mandible much longer than upper, almost the entire length of both being compressed like a knife blade. *Skimmers* (*Rynchopidæ*).
1. Lower mandible not longer than upper, nor especially compressed. See 2.
2. Covering of upper mandible consisting of a hook at tip, a cere overhanging the nostrils, and lateral pieces. *Jaegers* (*Stercorariidæ*).
2. Covering of bill in a single piece, pierced by the nostrils. *Gulls* and *Terns*. (*Laridæ*).

4. FAMILY STERCORARIIDÆ. JAEGERS AND SKUAS

This family comprises gull-like birds, with the bill hooked, and with a cere or covering of naked skin at the base. The lower part of the tibia is naked, and the middle tail-feathers project beyond the others.

Representatives of two genera occur on the Atlantic coast of North America, but only one has been noted in North Carolina.

Genus Stercorarius (Briss.)

KEY TO SPECIES

1. Culmen about 1½ inches or more, wing usually more than 13½, lengthened tail-feathers, broad and rounded at ends. *Pomarine Jaeger.*
1. Culmen less than 1½ inches, wing less than 13½, lengthened tail-feathers narrow and pointed at ends. See 2.
2. Tarsus black, like feet; middle tail-feathers in adult projecting about 4 inches. *Parasitic Jaeger.*
2. Tarsus light bluish, feet black, middle tail-feathers in adult projecting 8 or 10 inches. *Long-tailed Jaeger.*

9. Stercorarius parasiticus (*Linn.*). PARASITIC JAEGER.

Ads. light phase.—Back, wings, and tail slaty fuscous; top of head and lores nearly black; sides of head and back of neck straw-yellow, this color sometimes spreading down sides of neck and on throat; breast and belly white; sides of breast, flanks, lower belly, and crissum slaty fuscous; tarsi and feet (in dried specimens) black; middle tail-feathers pointed and extending about 3.00 beyond the others. *Ads. dark phase.*—Entire plumage dark, slaty brown, darker on top of head; underparts slightly lighter; sometimes a trace of straw-yellow on sides and back of neck; tarsi, feet and tail as in preceding. *Im. light phase.*—Upperparts, wings and tail fuscous; feathers of back, neck and head more or less bordered, tipped or barred with buffy; hindneck and head sometimes buffy, streaked or barred with fuscous, and varying from this color to plain fuscous; longer, lateral upper tail-coverts barred with buffy; tail buffy, whitish at base; under wing-coverts barred with buffy; underparts white, washed with buffy, and irregularly barred with sooty fuscous; these bars sometimes very numerous when the underparts look as if washed with sooty fuscous; again, they may be less numerous and confined to breast and sides, leaving the belly white; central tail-feathers pointed, projecting somewhat beyond the others. *Im. dark phase.*—Sooty fuscous feathers, particularly on underparts, more or less marked with ochraceous-buff. L., 17.00; W., 13.00; T., Ad., 8.60; Im., 6.40; B., 1.15.

Remarks.—This species closely resembles *S. longicaudus*. Adults of both species, whether in the dark or light phase of plumage, may always be distinguished from each other by the difference in the length of their central tail-feathers, in addition to the characters given in the key. Young birds cannot be distinguished by color, but may be identified by the differences in relative proportions of the bill. Eaton calls attention to the fact that in *parasiticus* the shafts of all the primaries are white, while in *longicaudus* only the outer two or three are white, the rest being abruptly brownish. (Chap., *Birds of E. N. A.*)

Range.—Northern portions of Northern Hemisphere, breeding far northward, straggling in winter occasionally to North Carolina.

Range in North Carolina.—Once taken near Cape Lookout in winter.

Our only record of this bird is that of a specimen purchased by Pearson from A. Piner of Morehead City. It had been taken near Cape Lookout in the fall of 1897. (See *Auk*, vol. 16, p. 249.)

Jaegers are fierce sea-pirates, and constantly rob gulls of their food. Pearson, who has watched them on the coast of Maine, states that their flight is very strong, and that they are able to turn and twist through the air with wonderful dexterity.

The Pomarine Jaeger (*Stercorarius pomarinus*) winters as far south as New Jersey, and the Long-tailed Jaeger (*Stercorarius longicaudus*) has been taken in Florida; hence both species are not unlikely to be found off our coast.

5. FAMILY LARIDÆ. GULLS AND TERNS

This large and important family contains the great majority of the long-winged swimmers. The usual color is white, with a darker mantle, usually of a pearly, bluish tint, but sometimes blackish or sooty.

Two subfamilies, the gulls (*Larinæ*) and the terns (*Sterninæ*), are recognized.

KEY TO THE SUBFAMILIES AND GENERA

1. Bill more or less hooked; general color chiefly white, with a darker (bluish-gray or slaty) mantle; tail usually even. Gulls. (Subfamily *Larinæ*.) See 2.
1. Bill not hooked, the mandibles even; tail deeply forked except in *Anoüs*. Terns. (Subfamily *Sterninæ*.) See 4.
2. Hind toe rudimentary or absent. *Rissa*.
2. Hind toe perfectly developed, but small. See 3.
3. Tail even. *Larus*.
3. Tail deeply emarginate or forked. *Xema*.
4. Tail little more than one-third length of wing, its outer feathers broad and rounded, toes scantily webbed, colors dark. *Hydrochelidon*.
4. Tail much more than one-third length of wing, its outer feathers narrow and pointed, toes full webbed. See 3.
5. Bill stout, its depth at its base equal to ⅓ culmen. *Gelochelidon*.
5. Bill slender, its depth at base not one-third its length. (If stout, wing is over 14.00.) *Sterna*.

SUBFAMILY LARINÆ. GULLS

The subfamily *Larinæ* numbers about fifty species, twenty-two of which inhabit North America. Six of these are known to visit North Carolina. The ocean is so distinctly the home of the family that these birds have long been known as "sea-gulls." They may be distinguished from the terns, which they much resemble, by their even or rounded tails, and also by their manner of feeding; when gathering food from the water, they settle or swoop rather than dart headlong, as do the terns. Gulls feed chiefly upon floating refuse and animal matter cast up by the tides. When weary, they rest upon the waves or gather, often in large flocks, at favorite spots on beaches, bars, or exposed mud-flats.

Genus Larus (Linn.)

KEY TO SPECIES

1. Head entirely white in summer; young more or less dusky on head. Lower parts white. Length 18 inches or more. See 2.
1. Head black or dusky in adult in summer. Length 17.00 or less. See 5.
2. Primaries without any black, pearl-gray in color, whitish at tip. *Glaucous Gull.*
2. Primaries with white and black, sometimes all black in young. See 3.
3. Shafts of primaries white throughout. Length about 30.00 *Great Black-backed Gull.*
3. Shafts of primaries black. Length 26 inches or less. See 4.
4. Bill without black band, feet flesh-colored. Length about 25.00. *Herring Gull.*
4. Bill yellowish, a black band near the tip in adult. Feet yellowish. Length about 20.00. *Ring-billed Gull.*
5. Tarsus much longer than middle toe with claw. Length about 15.00. *Laughing Gull.*
5. Tarsus not longer than middle toe with claw. Length about 13.00. *Bonaparte's Gull.*

FIG. 6. GLAUCOUS GULL.

10. Larus hyperboreus (*Gunn*). GLAUCOUS GULL.

Ads. in summer.—Back and wings pale pearl-gray; primaries lightly tinted with pearl, inner half of their inner webs and tips fading gradually into white; rest of plumage pure white. *Ads. in winter.*—Similar, but with head and neck lightly streaked with grayish. *Im.*—Upper-parts varying from ashy gray to white, feathers widely barred, mottled, or streaked with buffy or ashy gray; primaries varying from pale smoky gray to pure white; tail ashy or brownish

gray; underparts varying from dirty whitish to ashy gray, generally darker on belly, sometimes mottled with buffy or grayish. (Birds of the second year are said to be pure white.) L., 28.00; W., 17.10; B., 2.35; depth of B. at projection on the lower mandible .75 to 1.00; Tar., 2.60. (Chap., *Birds of E. N. A.*)

Range.—Arctic regions, sometimes straggling in winter to North Carolina.

Range in North Carolina.—Known to have been taken once in winter near Cape Lookout.

The appearance of this gull in North Carolina must be regarded as a very rare occurrence. One was found at Morehead City, Carteret County, March 30 or 31 1895, by Gerald H. Thayer. (*Auk*, vol. 19, July, 1902, p. 285.)

11. Larus marinus (*Linn.*). GREAT BLACK-BACKED GULL.

Ads. in summer.—Back and wings *slaty black;* wing-feathers tipped with white; rest of plumage white; tail sometimes mottled with dusky. *Ads. in winter.*—Similar, but with head and neck streaked with grayish. *Im.*—Head and nape whitish, streaked with grayish; back and wings, except primaries, brownish, the feathers margined and irregularly marked with pale buffy; primaries dark brownish black, inner ones with small white tips; tail mottled with black and white; underparts whitish, more or less streaked or barred with grayish. L., 29.00; W., 18.50; T., 8.00; B., 2.50. (Chap., *Birds of E. N. A.*)

Range.—North Atlantic, breeding from Nova Scotia northward, and wintering from southern Greenland to North Carolina.

Range in North Carolina.—Coastal region in winter; not common.

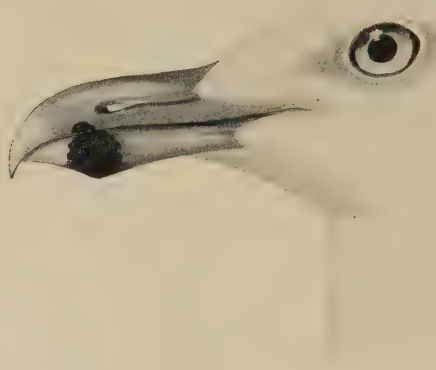


FIG. 7. GREAT BLACK-BACKED GULL.

The Black-backed Gull, or "Saddleback," breeds in North American waters from the Bay of Fundy northward, and North Carolina is probably about the southern limit of its winter range. "I saw one near Hatteras Inlet February 26, 1906, and on April 2, 1907, one was taken at Pea Island by J. B. Etheridge and forwarded to me for the State Museum."—H. H. BRIMLEY. One was seen by C. R. Hooker at Pea Island on February 15, 1901. (Bishop, *Auk*, Feb., 1901, p. 26.)

12. Larus argentatus (*Pont.*). HERRING GULL.

Ads. in summer.—Back and wings deep pearl-gray; first primary tipped with white, then crossed by a small black mark, then a much larger white one; this is followed by a black space; the black runs down the outer web of the feather to near its base and the shaft part of the inner web nearly as far, leaving the inner two-thirds of the web below the black mark white; second primary similar, but second white mark is a round spot on the inner web, and the black occupies a greater space near tip, but does not continue so far down on feather; third to sixth

primaries tipped with white, which is succeeded by a gradually diminishing black band which extends farther down on the outer web of the feather than on the inner; rest of plumage pure white. *Ads. in winter.*—Similar, but with head and neck streaked and spotted with grayish. *Im.*—Upperparts ashy fuscous; head and nape more or less streaked with pale buffy; back and wings margined or irregularly marked with same color; primaries brownish black; tail the same, sometimes tipped or margined with buffy; underparts ashy fuscous, sometimes lightly barred or streaked. L., 24.00; W., 17.50; T., 7.50; B., 2.30. (Chap., *Birds of E. N. A.*)

Range.—Northern Hemisphere, breeding from Maine northward, wintering from southern Canada to the West Indies.

Range in North Carolina.—Coastal region in winter; abundant.

FIG. 8. HERRING GULL.

These large gulls are very common about the harbors and the lower reaches of many of our rivers from September to April. They often come close to the wharves of the sea-coast towns to gather fragments of food floating on the water. Passengers of vessels find amusement in watching the gulls following in the wake, contending for the scraps of food thrown overboard. Often they feed upon fish and other animal matter cast up by the waves. In the Northern States they fly far inland and eat meadow-mice as well as grasshoppers and other insects. They have a peculiar way of feeding upon clams. Discovering one which has been exposed by the falling tide, the bird grasps it with its feet and, rising aloft, drops it upon the hard-packed sand, for the evident purpose of causing the shell to break by the

impact. If the first attempt fails to produce the desired result, the performance is repeated. Pearson once observed a Herring Gull at Beaufort make sixteen unsuccessful attempts to break a clam in this manner, the beach evidently being too soft for success.

Herring Gulls are abundant winter residents on our coast, and have increased noticeably in numbers of recent years, doubtless a result of the protection afforded them by the wardens of the National Association of Audubon Societies at their northern breeding-grounds.

13. Larus delawarensis (*Ord.*). RING-BILLED GULL.

Ads. in summer.—Back and wings pearl-gray; first primary black, with a white spot near tip, base of the inner half of the inner web pearl-gray; second primary black, the basal half of inner web pearl-gray; on the third to sixth primaries the black decreases rapidly, and each one is tipped with white; rest of plumage pure white; bill greenish yellow with a black band in front of the nostril. *Ads. in winter.*—Similar to above, but head and nape streaked with grayish. *Im.*—Upperparts varying from ashy fuscous, the feathers margined with whitish, to pearl-gray, the feathers more or less mottled, spotted, or, on head and neck, streaked with ashy. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding from the northernmost tier of States northward; winters from the Great Lakes to Cuba.

Range in North Carolina.—Coastal region, mainly in winter; occasionally inland.

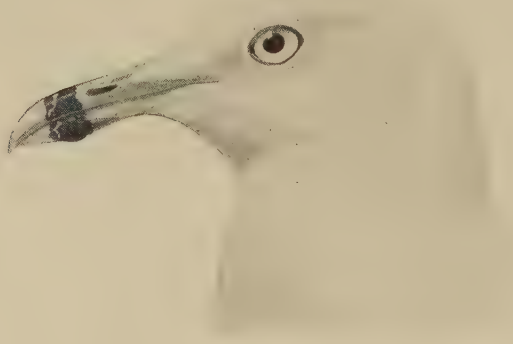


FIG. 9. RING-BILLED GULL.

The Ring-billed Gull is found on the coast, and also occurs inland, where it feeds upon insects, many of which it captures on the wing. Bishop states that it has been recorded from Pea Island, July 23 to August 20, 1904, and April 27 to May 15, 1906. Two were taken by N. E. Gould at Pea Island in January, 1908. "They seem to be both a summer and winter resident here at Pea Island, but are far more numerous from October 1 until the middle of November. Comparatively few remain during the winter."—(Letter from N. E. Gould.) A pair was taken by Cairns near Asheville, November, 1889. They do not breed in North Carolina.

14. Larus atricilla (*Linn.*). LAUGHING GULL.

Description: Ads. in summer.—Back and wings dark pearl-gray; primaries black, inner ones with small white tips; the whole head and throat are a deep slate-color; rest of plumage, including nape, pure white, breast sometimes suffused by a delicate peach-blossom tint; bill

dark reddish brighter at the tip. *Ads. in winter.*—Resemble above, but have the head and throat white, crown and sides of head and sometimes nape spotted or streaked with grayish. *Im.*—Upperparts light ashy fuscous, the feathers margined with whitish; primaries black; forehead and underparts white, sometimes washed in places with dusky; tail dark pearl-gray, broadly tipped with black. L., 16.50; W., 12.50; T., 4.90; B., 1.65. (Chap., *Birds of E. N. A.*)

Range.—Maine to Brazil along the coast; also casually in Colorado, Nebraska, Wisconsin. Iowa, and Ontario.

Range in North Carolina.—Coastal region, breeding in Pamlico Sound.

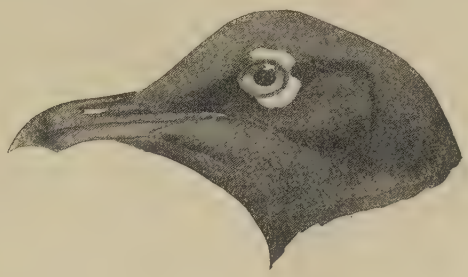


FIG. 10. LAUGHING GULL.

In summer plumage this is a strikingly beautiful bird. The solid slaty black of the head, the pure white of the neck, the dark pearl gray of the upperparts and the black primary feathers contrasting sharply against the pure white of the underparts and tail, combine to produce a bird of noticeably handsome appearance. In the breeding season it is a noisy and graceful addition to the life of the treeless islands on which it nests.

As a result of protection extended to them by the Audubon Society in recent years, the Laughing Gulls have greatly increased in numbers since 1903, when they were not known to breed anywhere in this State. About seven hundred young birds are now raised every summer on Royal Shoal Island in Pamlico Sound, where their nests are built among the clusters of grass and weeds growing on the dry parts of the island.

15. Larus philadelphia (*Ord.*). BONAPARTE'S GULL.

Ads. in summer.—Whole head and throat dark, sooty slate-color; nape and sides of the neck, underparts, except throat, and tail white; back and wings pearl-gray; first primary, when viewed from above, white, outer web and tip black; second and third primaries white, tipped with black; third to sixth primaries with small whitish tips, then large black spaces, the rest of feather white or pearl-gray; bill black. *Ads. in winter.*—Similar, but head and throat white, back and sides of head washed with grayish. *Im.*—Top of the head and nape and a spot on the auriculars more or less washed with grayish; back varying from brownish gray to pearl-gray; lesser wing-coverts grayish brown, secondaries mostly pearl-gray; first primary with outer web, tip, and most of the shaft part of inner web black; inner margin of inner web at end of feather narrowly bordered with black; second and third primaries much the same, but with slightly more black at ends; tail white, banded with black and narrowly tipped with white; underparts white. L., 14.00; W., 10.30; T., 4.00; B., 1.15. (Chap., *Birds of E. N. A.*)

Range.—North America; breeds far northward; winters from Maine to Florida, and on the Gulf Coast to Texas and Yucatan; on the Pacific Coast from British Columbia to Mexico.

Range in North Carolina.—Coastal region in winter; occasionally inland.

These graceful gulls are seen on the North Carolina coast during the period of migration, when they frequently associate in considerable numbers. Coues, in 1871, said that at Fort Macon they were strictly migrant, occurring in April and May, and again from September to November. Bishop took one at Pea Island,

FIG. 11. BONAPARTE'S GULL.

January 28, 1901. "A flock of more than eighty was seen close to the bench at Fort Macon, April 10, 1898, and five specimens were taken by our party. One was killed at Lindley Park, near Greensboro, March 20, 1904, and brought to me for identification. The species probably occurs inland not infrequently."—PEARSON.

SUBFAMILY STERNINÆ. TERNS

Genus Gelochelidon (Brehm.)

16. Gelochelidon nilotica (*Linn.*). GULL-BILLED TERN.

Ads. in summer.—Top of head and nape black; back and wings pale pearl-gray; outer web of outer primaries silvery; tip and shaft-part of inner web darker; inner part of inner web, except for a narrow margin at end of feather, white; tail white, slightly forked, the middle

FIG. 12. GULL-BILLED TERN.

feather grayish; underparts white; bill and feet black, the former rather short and stout. *Ads. in winter.*—Similar to the above, but top of the head white, auriculars grayish, and a space in front of the eye blackish. L., 14.50; W., 12.00; T., 5.50; B., 1.40; depth of B. at base, .50. (Chap., *Birds of E. N. A.*)

Range.—Cosmopolitan, chiefly on sea-coasts.

Range in North Carolina.—Coastal region in summer; rare.

A pair of these exceedingly rare birds was reported by Warden N. F. Jennett to have reared young on Miller Lump, a small island in Dare County, during the summer of 1909. On June 26, 1909, Bowdish identified one at this place. So far as known, the only other breeding place of these birds along the Atlantic coast of the United States at this time is near Cobb's Island, Virginia. This species is said to be very partial to insects and catches large numbers of them while flying.

Genus Sterna (Linn.)

KEY TO SPECIES

1. Wing more than 12.00; mantle pearl-gray. See 2.
1. Wing less than 12.00. See 4.
2. Tail much less than half as long as wing, forked for less than one-fifth its total length; head not crested. *Caspian Tern.*
2. Tail more than half as long as wing, forked for at least half its length; head crested. See 3.
3. Bill deep orange or red. L., 18.00 to 21.00. *Royal Tern.*
3. Bill deep black, usually pale at tip. L., 14.00 to 16.00. *Cabot's Tern.*
4. Wing less than 7.00; tail about half as long as wing, forked for about half its length; mantle pearl-gray. *Least Tern.*
4. Wing more than 9.00. See 5.
5. Mantle and middle tail-feathers slaty or blackish; inner webs of wing-quills entirely dusky. *Sooty Tern.*
5. Mantle bluish gray; tail chiefly white. See 6.
6. Both webs of outer tail-feathers entirely white. *Roseate Tern.*
6. Outer web of outer tail-feather entirely white; inner web grayish or dusky toward end. *Forster's Tern.*
6. Inner web of outer tail-feather entirely white; the outer web dusky in sharp contrast. See 7.
7. Bill and feet red. *Arctic Tern.*
7. Bill red, blackish at tip; feet orange. *Common Tern.*

All the above species occur in our State, except the Arctic tern, *Sterna paradisea* Brünn., a slightly smaller bird than the common tern, and with a proportionately longer tail. It breeds on the Atlantic coast from Maine northward, and winters in the Antarctic ocean; hence there is a possibility of seeing it at any intermediate point.

17. Sterna caspia (*Pallas*). CASPIAN TERN.

Ads. in spring.—Top and back of head shining black, the feathers not lengthened to form a crest; back of neck, underparts, and tail white; back and wings pearl-gray; primaries dark slaty, silvery on the outer web; bill coral-red, darker near the tip; feet black. *Ads. after the breeding season and in winter.*—Similar to the above, but top of the head streaked with black. *Im.*—Top of head streaked with black and white; back of neck and underparts white; back, wing-coverts, and tertials pearl-gray, spotted or barred with brownish black; primaries dark slaty, silvery on the outer web; tail pearl-gray, more or less barred with brownish black; bill orange-red; feet blackish brown. L., 21.00; W., 16.20; T., 6.00; B., 2.80. (Chap., *Birds of E. N. A.*)

Range.—Nearly cosmopolitan, coastwise, and in certain places inland.

Range in North Carolina.—Coastal region; not common.

This, the largest of the terns, is entitled to a place in this book on the authority of Bishop, who has received specimens taken in Dare County in the years 1904, 1906, and 1907, on dates ranging from April 15 to May 5 in the spring, and from July 22 to September 7 in the fall. Judging alone from these records, it would seem that the Caspian Tern is with us a migrant only, but as it is known to breed

in South Carolina, and as it formerly bred in Virginia, there would appear to be no adequate reason why, if given proper protection, this species should not become a summer resident on our coast.

18. Sterna maxima (*Bodd.*). ROYAL TERN.

Ads. in spring.—Top and back of head shining black, feathers lengthened to form a crest; back of neck, underparts, and tail white; back and wings pearl-gray; inner web of primaries, except at tip, white; outer web, and shaft part of inner web dark, silvery slate-color. *Ads. after the breeding season and in winter.*—Similar, but the top of the head streaked with black and white. *Im.*—Resembling young of *S. caspia*, but smaller and with the inner half of the inner web of the primaries white. L., 19.00; W., 14.00; T., 7.00; B., 2.50. (Chap., *Birds of E. N. A.*)

Range.—Breeds from the West Indies to Virginia, winters from Gulf of Mexico to Peru and Africa.

Range in North Carolina.—Coastal region in summer; breeds.

"Royal Terns were recorded by Coues in 1871, and since have apparently been a common summer resident along our shores, increasing greatly in numbers in recent years as a result of the protection afforded them on their nesting grounds by the wardens employed by the State Audubon Society. Like most of the species of this family, they breed in colonies. Their eggs, one or two together, are placed among the shells on the bare sand without any semblance of a constructed nest other than a slight depression in the earth. The nests are seldom more than 12 or 14 inches apart, and when their owners are breeding it is difficult at a little distance to see the sand, so completely is it covered by the birds.

"Their chief colony on the North Carolina coast is on Royal Shoal Island in Pamlico Sound, about 10 miles from Ocracoke. Here, on June 25, 1907, the writer found the birds occupying two plats of ground each 40 or 50 feet in width and about 150 feet in length. On approaching one of these groups, the birds arose *en masse* and hovered in the air, with heads to the wind.

"Taking my stand to windward of the field of eggs, I at once had the satisfaction of seeing the birds settling at the other end. Soon others began alighting nearer. I remained stationary and watched the splendid sight. There were at least two thousand birds in the flock, and only a few minutes elapsed before the majority were standing on the ground over their eggs, many within 12 or 15 feet of me. Never for a moment did their prodigious screamings cease; in fact, their discordant cries continued long after I had gone aboard the Audubon patrol-boat, *Dutcher*, which lay for the night in the bight of the island.

"As soon as the young are able to walk, they leave the nests and travel about the island in flocks. I counted one company of three hundred and forty-one thus engaged. When alarmed by my presence, they ran along the beach until, being hard pressed, they plunged unhesitatingly into the water and in a compact mass started toward the open sea. The young are supplied abundantly with small fish, many of which may be picked up on the rookery. How, among the hundreds of young running at large on the island, the parents are able to distinguish their own is one of the many interesting questions of natural history as yet but poorly answered."—PEARSON.

ROYAL TERN. Sterna maxima (Bodd.) Standing.

CABOT'S TERN. Sterna sandvicensis acuflavida (Cabot.) Sitting.

19. Sterna sandvicensis acuflavida (*Cabot*). CABOT'S TERN.

Description.—Plumages essentially similar to the corresponding ones of the Royal Tern. Bill deep black, usually with yellowish or whitish tip. L., 14.00-16.00; W., 12.50; T., 6.00.
Range.—Breeds from North Carolina to Mexico; winters from Florida to Brazil.
Range in North Carolina.—Coastal region in summer; breeds. Coues observed it at Fort Macon in 1870 as a migrant and scarce winter visitor.

"Dr. Coues makes mention of the Cabot's Tern occurring at Fort Macon in 1871 as a migrant and infrequent winter visitor. Apparently no ornithologist again noticed this species until Bishop recorded its appearance at Pea Island, August 31, 1904, and again on August 4, 1906. It was, therefore, with much surprise that I found the bird breeding on Royal Shoal Island in June, 1908. The nests, over twenty of which I counted, were merely slight excavations in the sand among the shells. All were situated among the closely clustered nests of the Royal Tern, with which the Cabot's Tern seemed to associate constantly. Like their large neighbors, they were very tame, and I easily photographed them at a distance not greater than fifteen feet. Late in the day, by exercising much patience, I crawled over the bare beach to within *seven feet* of one as it sat on its eggs, and for several minutes we observed each other at leisure. During the course of my approach the brooding bird frequently left its eggs and hovered above it, but quickly settled again when my movements ceased. Warden N. F. Jennett, who guards the island, reported that sixty-four Cabot's Tern eggs were laid during the season of 1907, and that in 1908 one hundred and twenty-six eggs were deposited. Two eggs are usually found in a nest. It is interesting to note that Royal Shoal and Legged Lump, but a few miles distant, probably constitute the northern breeding range of the bird on the Atlantic Coast of America."—PEARSON.

20. Sterna forsteri (*Nutt.*). FORSTER'S TERN.

Description.—Summer adult pale pearl-gray above, white below; whole top of head and nape black; bill dull orange, feet orange-red; in winter somewhat duller, with whole top of head white; immature birds similar to winter adults, but duller. Inner web of outer tail-feather dusky towards end, the outer web entirely white. L., 14.00-15.00; W., 9.50-10.25; T., 5.50-7.75.

FIG. 13. FORSTER'S TERN.

Range.—North America, breeding on the Atlantic Coast as far south as Virginia, and wintering from South Carolina to Central America.
Range in North Carolina.—Now accidental in the coastal region.

This species appears to be rare in our State. It was mentioned by Coues as a migrant and also winter resident at Fort Macon in 1871. Bishop found it at Pea Island, July 23 to August 20, 1904. A few pairs, perhaps twelve or fifteen, are yet known to breed near Cobb's Island, Virginia, which appear to constitute the only summer colony remaining today on the Atlantic coast of the United States.

21. Sterna hirundo (*Linn.*). COMMON TERN.

Ads. in summer.—Whole top of head black; back and wings pearl-gray; inner border of inner web of outer primaries white, except at tip; throat white; *breast and belly pale pearl-gray;* tail white, the *outer* webs of the outer feathers gray or pearl-gray; bill red at the base, the end-third *black;* feet orange-red. *Ads. in winter.*—Similar, but front part of head and underparts white; bill mostly black. *Im.*—Similar, but back more or less washed or mottled with light brownish; lesser wing-coverts slaty-gray, and tail much shorter. L., 15.00; W., 10.25; T., 5.50; Tar., .75; B., 1.40. (Chap., *Birds of E. N. A.*)

Range.—Northern Hemisphere, northern South America, and Africa. Breeds from Great Slave Lake, central Keewatin, and southern Ungava south to southwest Saskatchewan, northern North Dakota, southern Wisconsin, northern Ohio, and North Carolina; winters from Florida to Brazil; casual in migration on Pacific coast from British Columbia to Lower California.

Range in North Carolina.—Coastal region in summer; breeds.

FIG. 14. COMMON TERN.

Next to the Royal Tern, this is today the most abundant member of the family along the North Carolina coast, from which it rarely if ever strays inland. On various islands in Pamlico Sound it breeds, placing its eggs on the drifted eel-grass above high-water mark, or more frequently dropping them in the sand. It is very noisy when its nest or young is approached, and will frequently dart viciously at the intruder, screaming continuously in a high-pitched voice. It is graceful in its movements, presenting a beautiful sight as it beats along our shores early in spring and late in summer, adding much to the charm of a seaside visit. Like our other terns, it suffered greatly at the hands of the plume-hunters for many years. Now, however, thanks to the protection afforded it by the Audubon Society, it bids fair to resume something like its former numbers.

22. Sterna dougalli (*Montague*). ROSEATE TERN.

Ads. in summer.—Top of head black; back and wings pearl-gray; outer web of outer primaries and shaft part of the inner web slaty black; underparts white, generally delicately tinted with pinkish; tail *pure white;* bill black, the base reddish; feet red. *Ads. in winter.*—

Similar to the above but front of the head white, more or less streaked or spotted with black; underparts pure white. (Chap., *Birds of E. N. A.*) *Im., first plumage.*—"Pileum and nape pale buffy grayish, finely mottled or sprinkled with darker, and streaked, especially on the crown, with dusky; orbital and auricular regions dusky blackish; remainder of the head, extreme lower part of the nape, and entire lowerparts white, the nape and sometimes the breast, finely mottled with buffy gray; back, scapulars, wing-coverts, rump, upper tail-coverts, and tail, pale pearl-blue, the back and scapulars overlaid with pale buff irregularly mottled with dusky, each feather with a submarginal dusky V-shaped mark; primary coverts and primaries dark bluish gray edged with paler, the inner webs of the latter broadly edged with white; tail-feathers marked near their ends much like the longer scapulars, their outer webs rather dark grayish; bill brownish dusky; feet dusky." L., 15.50; W., 9.50; T., 7.50; B., 1.50 (B., B., and R.).

Range.—Temperate and tropical regions, on coasts; now rare in the eastern United States.

Range in North Carolina.—Coastal region; rare migrant.

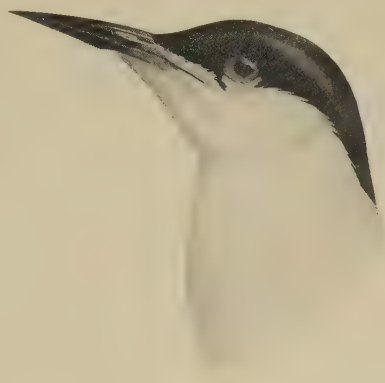


Fig. 15. Roseate Tern.

Our only record of the occurrence of the Roseate Tern in North Carolina is that made by Bishop at Pea Island, August 22, 1904. (Mss.) The bird is not known to nest south of Massachusetts and possibly New York.

23. Sterna antillarum (*Less.*). Least Tern.

Ads. in summer.—Forehead white, *lores* and crown black; back, tail and wings pearl-gray; outer web of outer primaries and shaft part of inner web slaty black; underparts white; bill yellow, generally tipped with black; feet orange. *Ads. in winter.*—Top of head white, more or less spotted with black; back of head black; bill blackish. *Im.*—Upperparts and tail at end mottled with blackish and buffy, primaries as in adult, underparts white, bill blackish. L., 9.00; W., 6.90; T., 3.50; B., 1.10. (Chap., *Birds of E. N. A.*)

Range.—Tropical and temperate America. Breeds from Massachusetts to Venezuela.

Range in North Carolina.—Coastal region in summer; breeds.

This is the smallest of our terns. Judging by the reports of fishermen, the "Little Striker" was at one time the most abundant of those *Longipennes* which frequent the sounds and beaches of our South Atlantic coast. The beauty of its plumage as well as the convenient size of its wings for women's hats made it a bird especially desired for commercial purposes. It has been stated frequently on good authority that ten thousand skins of the Least Tern were collected by a New York millinery firm on Cobb's Island, Virginia, in a single season. Royal Shoal Island, together with Legged Lump Island, both of which are owned and protected by the Audubon Society, are today the homes of the largest colonies in the eastern United States; four or five hundred pairs gather here each summer to breed. When in quest of

food they often collect in numbers about the inlets or other places where the tides run rapidly between the shoals. On such occasions they may be seen flying slowly against the breeze, or falling off and darting with great rapidity down wind, only to round up in wide, irregular circles. From a height of ten to fifty feet they plunge like beautiful silvery arrow-heads into the deep, and with equal grace rise

FIG. 16. LEAST TERN.

again quickly on the wing. After feeding, they rest in crowds on the sand-bars or along the beaches. Not infrequently the spot chosen is the favorite resting-place for other varieties of birds, and the assembly forms a noticeable object as viewed from a passing vessel. These birds also nest to a limited extent on the sand-beaches about Ocracoke. In addition to fish, the Least Tern is said to partake sparingly of insects.

FIG. 17. SOOTY TERN.

24. Sterna fuscata (*Linn.*). SOOTY TERN.

Description.—Upperparts uniform sooty black, forehead, sides of head, and lower parts white; bill and feet black; immature birds wholly sooty brown, paler below; the anal region and under wing-coverts white. L., 15.00-17.00; W., about 12.00; T., 7.00-7.50.

Range.—Mainly tropical and subtropical regions.

Range in North Carolina.—Occasional on the coast; accidental inland.

Coues mentions seeing a flock of these southern terns near Fort Macon on March 16, 1869. An adult male was captured near Raleigh on June 30, 1909, and brought to H. H. Brimley. It was much emaciated, although apparently uninjured. The specimen is preserved in the State Museum. This constitutes the total of our knowledge regarding the appearance of this tropical form within the State.

Genus Hydrochelidon (Boie)

25. Hydrochelidon nigra surinamensis (*Gmel.*). BLACK TERN.

Ads. in summer.—Whole head and underparts, except under tail-coverts, black; back, wings, and tail slate-color; bill and feet black. *Ads. in winter.*—Forehead, nape, and underparts white; back of the head black mixed with white; back, wings, and tail deep pearl-gray. *Im.*—Similar to the preceding, but upperparts more or less washed and tipped with brownish; sides washed with grayish. L., 10.00; W., 8.30; T., 3.30; B., 1.00. (Chap., *Birds of E. N. A.*)

Range.—North and South America. Breeds inland from central Canada to Missouri and California. Coast of United States in autumn; winters southward to Peru and Chile.

Range in North Carolina.—Occurs to a limited extent throughout the State during the migrations, principally, however, in autumn.

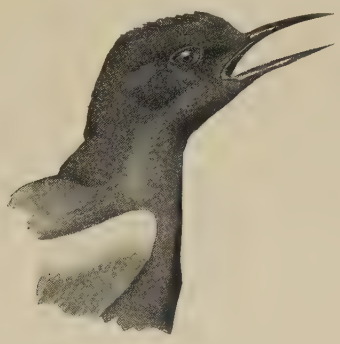


FIG. 18. BLACK TERN.

The Black Terns are common migrants in North Carolina, occurring in spring, but more abundantly from July to October. In irregular flocks they appear in Pamlico Sound early in July. "I saw them near Ocracoke in considerable numbers on July 5, 1899. Bishop found them near Pea Island, July 13 and 15, and again August 10-24, 1904. Apparently all pass on to the south before the coming of cold weather. Unlike any other species of North Carolina terns, this one occurs regularly inland, on small bodies of water. H. H. Brimley has recorded one at Raleigh on each of the following dates: July 28, 1884; August 3, 1893; May 10, 1898, and April 18, 1907. I found two on Lake Toxaway, in Transylvania County, September 5, 1904, and three at Cone's Lake, Blowing Rock, in July, 1906. Bruner observed a number at Blowing Rock in the summer of 1905. H. H. Brimley saw two at White Lake, Bladen County, May 20, 1909. The movements of this tern when flying over a pond suggest those of the Nighthawk when darting about over the fields of a summer evening, the nearness in size and superficial similarity of color when not in a strong light assisting the resemblance. J. F. Jordan, of Greensboro, told me that in August, 1905, a Black Tern approached a boat in which he was fishing, at Manchester, in Cumberland County and, striking down, took in its beak the baited hook he was swinging in the air."—PEARSON.

6. FAMILY RYNCHOPIDÆ. SKIMMERS

A small family of gull-like birds with the lower mandible much longer than the upper, both being excessively compressed like a thin knife-blade.

Genus Rynchops (Linn.)

26. Rynchops nigra (*Linn.*). BLACK SKIMMER; "SHEARWATER."

Ads.—Forehead, sides of the head, underparts and tips of the secondaries white; upperparts and wings black; outer tail-feathers white, inner ones more or less brownish; base of bill red, end black. L., 18.00; W., 14.50; T., 4.75; B., 2.60.

Range.—Tropical and temperate America. Breeds from Virginia (formerly from New Jersey) to the coast of Texas; wanders casually north to Bay of Fundy; winters from the Gulf coast to Colima, Mexico, and Costa Rica; casual in the West Indies. (Chap., *Birds of E. N. A.*)

Range in North Carolina.—Coastal region in summer.

FIG. 19. BLACK SKIMMER.

"Late in April, or about the first of May, Black Skimmers appear along our coast in small flocks which rapidly increase by the arrival of others. When in search of food, they usually go in pairs or small flocks, often strung out in long, uneven columns or lines. Sometimes these unite and in large companies, and the birds rest on the sand or, rising, whirl in a compact mass out over the water, frequently to return in a few minutes to the spot but recently quitted. The chorus of deep cries which they emit on such occasions might well be compared to that of innumerable eager hounds hot upon the trail of some denizen of the forest.

"Skimmers are largely crepuscular in their feeding habits, being much more active about twilight. But far into the night, especially when the moon is bright, their weird, harsh bark may be heard as they fly slowly over the water, the under mandible slanting downward and cutting the surface like a knife-blade. Skimmers breed with us in June, July, and August, on several of the islands and beaches in Dare, Hyde, and Carteret counties. Often their nests are located near those of the terns, which usually resort to the same region for purposes of nidification. In June, 1907, a storm tide swept a thousand eggs of the Royal Tern from their nests

on Royal Shoal, and left them in a great windrow along the beach. (See photograph in *Bird-Lore*, vol. 10, p. 125.) The terns at once took possession of the part of the island occupied by the Skimmers, scratched holes in the sand for their nests, and buried or kicked the Skimmers' eggs out of the way."—PEARSON.

III. ORDER TUBINARES. TUBE-NOSED SWIMMERS

The representatives of this order are all birds of the high seas. They are much like the Long-winged Swimmers in general appearance, but the covering of the bill is composed of several pieces separated by deep grooves. The bill is hooked at the tip, and the nostrils are tubular. But one family is represented in our fauna.

7. FAMILY PROCELLARIIDÆ. FULMARS, SHEARWATERS, AND PETRELS

Nostrils united in a double tube placed on the culmen. Only two genera are known to occur on our coast, but another is not unlikely to visit it.

KEY TO GENERA

1. Secondaries 13 or more in number. Wing more than 7.00. Partition between nostrils very thick. *Puffinus.*
1. Secondaries 10. Tarsus over 1.25. Wing less than 7.00. *Oceanites.*

Genus Puffinus (Briss.)

KEY TO SPECIES

Four species have been recorded, and may be distinguished as follows:

1. Dusky above and below. *Sooty Shearwater.*
1. Dusky above, white below. See 2.
2. Wing less than 12.00. *Audubon's Shearwater.*

FIG. 20. CORY'S SHEARWATER.

2. Wing more than 12.00. See 3.
3. White of throat, shading gradually into dusky of head and neck. *Cory's Shearwater.*
3. White of throat, separated abruptly from dusky of head and neck. *Greater Shearwater.*

27. **Puffinus borealis** (*Cory*). CORY'S SHEARWATER.

Description: Ad.—Upperparts ashy fuscous, wings and tail darker; sides of head and neck slightly lighter; underparts white, sometimes washed with grayish on the breast; under wing-coverts and under tail-coverts white, the latter more or less mottled with grayish; bill yellowish. L., 21.00; W., 14.00; Tar., 2.20; B., 2.10. (Chap., *Birds of E. N. A.*)

Range.—Known heretofore only off the coasts of Massachusetts, Rhode Island, and Long Island.

Range in North Carolina.—Accidental at Beaufort.

Cory's Shearwater is recorded on the authority of Atkinson, who in his "Preliminary Catalogue of North Carolina Birds" says: "I saw at Beaufort a wing of one of the shearwaters taken at that place. From the *length of the wing* and from the description of the bird given to me, I judge it to be this species." This was in December, 1887.

28. **Puffinus gravis** (*O'Reilly*). GREATER SHEARWATER.

Description: Ads.—Upperparts fuscous, wings and tail slightly darker; longer upper tail-coverts tipped with whitish; underparts white; belly more or less ashy gray; under tail-coverts ashy gray; bill blackish. L., 20.00; W., 12.25; Tar., 2.20; B., 1.85. (Chap., *Birds of E. N. A.*)

Range.—Whole Atlantic; occurs off the coast of North America from June to November.

Range in North Carolina.—Coastal region, off shore.

FIG. 21. GREATER SHEARWATER.

Maynard states that on July 4, 1897, while about fifty miles off Cape Hatteras, he saw a number of these birds (Smithwick's List, p. 202). As the species occurs from the Arctic Circle to Cape Horn and the Cape of Good Hope, it may be expected to occur off our coast from time to time.

29. **Puffinus lherminieri** (*Less.*). AUDUBON'S SHEARWATER.

Description.—Upperparts, wings, and tail dark, sooty, brownish black; underparts white; sides of the breast grayish; a patch on the flanks and under tail-coverts sooty brownish black; inner side of tarsi yellowish, outer brownish; bill blackish. L., 12.00; W., 8.00; Tar., 1.60; B., 1.20. (Chap., *Birds of E. N. A.*)

Range.—Warmer parts of the Atlantic Ocean. Breeds in the Antilles and Bahamas.

Range in North Carolina.—Accidental at Beaufort.

One was picked up dead at Beaufort on July 28, 1910, by Stephen C. Bruner, of Raleigh, who now has the skin in his possession.

Fig. 22. Audubon's Shearwater.

30. Puffinus griseus (*Gmel.*). Sooty Shearwater.

Description: Ads.—Upperparts, wings and tail dark, sooty, brownish black; underparts somewhat grayer; bill blackish. L., 17.00; W., 12.00; Tar., 2.10; B., 1.65. (Chap., *Birds of E. N. A.*)

Range.—Oceans of Southern Hemisphere to Alaska and the Gulf of St. Lawrence.

Range in North Carolina.—Coastal region, off shore in summer.

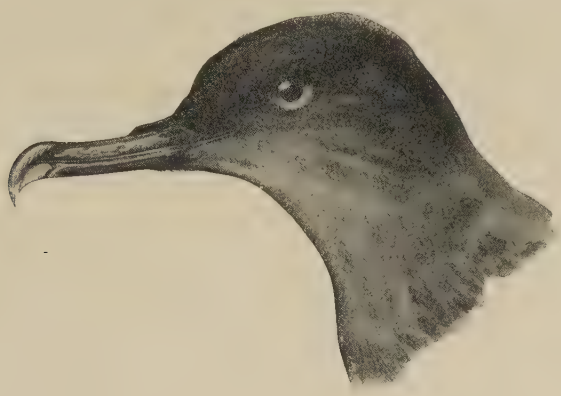


Fig. 23. Sooty Shearwater.

One was taken at Fort Macon by Coues, May 21, 1870. Pearson found two in the possession of Augustine Piner, a taxidermist at Morehead City, in 1899, and was told that they had been taken near Cape Lookout two years previous. A third record is that made by H. H. Brimley at Beaufort, June, 1892.

Genus Oceanites (K. and B.)

31. Oceanites oceanicus (*Kuhl*). Wilson's Petrel.

Description: Ads.—Upperparts, wings and tail sooty black; underparts somewhat lighter; under tail-coverts mixed with whitish, longer upper tail-coverts white, shorter ones marked with sooty black; wing-coverts grayish, margined with whitish; bill and feet black, toe-webs mostly yellow. L., 7.00; W., 5.90; T., 2.80; B., .50. (Chap., *Birds of E. N. A.*)

Range.—Breeds on Antarctic islands in February; occurs off the American coast from May to September.
Range in North Carolina.—In the ocean, off shore, in summer.

"This is the petrel frequently seen on our Atlantic waters in summer. While trolling for mackerel off the coast near Cape Lookout the writer saw several of these birds in July, 1899. So close to the waves do they fly, and often with their feet hanging, that it is little wonder the idea arose long ago that petrels actually walk the waves like Peter of old. I have frequently watched them at sea beating about the vessel, now circling the bow, now dropping far behind to examine some fragments of food thrown overboard, and again appearing close alongside. They always remind me of purple martins with white rumps. During the severe storm which raged on the North Carolina coast August 28, 29, and 30, 1893, many thousands of these birds were driven and washed ashore along the line of beach extending from the mouth of Beaufort Harbor to Cape Lookout, a distance of ten miles. I have this information from several reliable parties. The exact dates of the storm I secured from the log-book of Capt. William H. Gaskin of the Cape Lookout Life Saving Station.

FIG. 24. WILSON'S PETREL.

"Mr. James Davis, formerly a well known business man of Beaufort, who had occasion to go along the beach to a wreck just after the storm, says: 'Every two or three yards lay a Mother Cary's chicken; many were dead, others were alive, but too weak to fly. In places two or three would be lying together; at certain points for a distance of many feet the ground would be completely covered with the bodies, sometimes piled two or three deep. This was frequently the case until I reached the bight of the cape. Here in the cove the slaughter had been tremendous. Thousands of birds sat or lay on the ground, covering the beach like a blanket, extending from the water's edge up into the grass on the higher ground. The fishermen of the neighborhood carried home with them baskets filled with these birds to eat.' Mention of this remarkable occurrence was made in the *Auk*, vol. 16, p. 247."—PEARSON.

The Leach's Petrel, *Oceanodroma leucorhoa* (Vieill.), sometimes occurs as far south as Virginia, and may perhaps wander to this State. This is very similar in appearance to the Wilson's, but has shorter legs (tarsus less than 1.00, instead of over 1.25 as in the Wilson's Petrel), and is somewhat larger. (L., 5.50-8.75; W., 6.00-6.25; T., 3.50-4.00.)

IV. ORDER STEGANOPODES. TOTIPALMATE SWIMMERS

This order comprises those birds which have completely webbed feet, the web even connecting with the hind toe. Five families are represented in the State, and members of a sixth (*Phaëthontidæ*) may possibly occur as stragglers. All are large.

KEY TO FAMILIES

1. Nostrils evident; bill not hooked; tail short, with long central feathers; whole head feathered. *Phaëthontidæ*, Tropic birds.
1. Nostrils not perceptible; head with some naked skin. See 2.
2. Bill hooked at tip. See 3.
2. Bill not hooked at tip. See 5.
3. Tail very deeply forked. *Fregatidæ*, Man-o'-war birds.
3. Tail not forked. See 4.
4. Bill compressed; gular sac small. *Phalacrocoracidæ*, Cormorants.
4. Bill flattened; gular sac very large. *Pelecanidæ*, Pelicans.
5. Bill very thick at base; tail graduated. *Sulidæ*, Gannets.
5. Bill slender; neck very long and slender, tail long, rounded. *Anhingidæ*, Darters.

Two species of the family *Phaëthontidæ* occur in the West Indies and occasionally straggle northward. These are the Yellow-billed Tropic-bird, *Phaëthon americanus* (Grant), a good-sized, light-colored sea-bird with the bill yellow or orange and with the wing about 11 inches, and the Red-billed Tropic-bird, *Phaëthon æthereus* (Grant) which is similar, but has the bill coral-red in the adult. The latter is a little larger, the wing being 11.75-12.00. Both, when adult, have the middle tail-feathers projecting far beyond the others.

8. FAMILY SULIDÆ. GANNETS

Genus Sula (Briss.)

KEY TO SPECIES

One species occurs in our State and another southern form is known to have ranged as far north as South Carolina.

1. Whole lower bill, together with chin and entire throat, naked. Feet greenish or yellowish. Wing about 15.75. *Booby.*
1. Sides of lower bill and sides of chin and throat densely feathered. Feet blackish. Wing about 19.50. *Gannet.*

32. Sula bassana (*Linn.*). GANNET.

Description: Ads.—White, head and neck tinged with pale straw-yellow; primaries fuscous. *Im.*—Throat and upperparts, including wing-coverts, dark grayish brown, each feather with a small white wedge-shaped spot; breast and belly white, margined with grayish brown. L., 35.00; W., 19.00; T., 9.50; B., 4.00. (Chap., *Birds of E. N. A.*)

Range.—Coasts of North Atlantic Ocean. Breeds northerly in Gulf of St. Lawrence and on the British Islands; winters from North Carolina to Gulf of Mexico.

Range in North Carolina.—Coastal region in the cooler portions of the year.

This species appears in winter in Pamlico Sound and in the ocean off our shores, where it is found singly or in small straggling flocks. When in quest of food it flies over the ocean with neck outstretched, usually at an altitude of from fifty to one hundred feet. When a coveted fish is discovered, it plunges headlong, striking the water with terrific force. Sailors are said to amuse themselves sometimes by towing a heavy plank upon which has been nailed a fish. The force of the blow when the bird strikes sometimes drives its bill through the board.

Augustine Piner has killed many in the ocean near Morehead City, and specimens in the Museums at Guilford College, at the Normal and Industrial College at Greensboro, and in the State Museum at Raleigh, were secured from him by Pearson. Coues saw several at Fort Macon during thick weather in 1869 and 1870. Bishop records one from Pea Island, January 2, 1906.

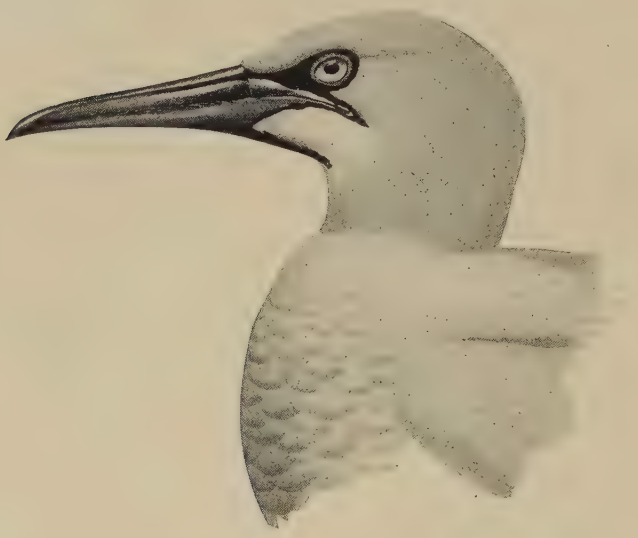


FIG. 25. GANNET.

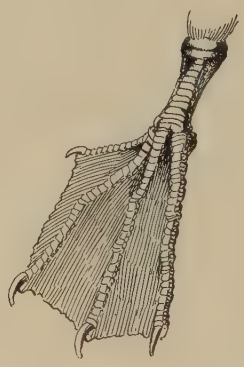


FIG. 26. FOOT OF GANNET.

Besides the Gannet, another member of this family, the Booby, *Sula leucogastra* (Bodd.), may occur as a straggler on our coast in summer. This is a somewhat smaller bird than the Gannet, and is mainly sooty brown in color.

9. FAMILY ANHINGIDÆ. DARTERS

Genus Anhinga (Briss.)

33. Anhinga anhinga (*Linn.*). WATER-TURKEY

Ad. ♂ in summer.—General plumage glossy black with greenish reflections; back of head and neck with scattered grayish plumes; upper back with numerous elongated silvery white spots, which on the scapulars become streaks; lesser wing-coverts spotted like back; exposed portion of median and greater coverts silvery gray; tail tipped with whitish, outer webs of middle pair of feathers with transverse flutings. *Ad. ♂ in winter.*—Similar, but without grayish plumes on head and neck. *Ad. ♀.*—Similar to ♂, but with the whole head, neck, and breast brownish, darker above. *Im.*—Similar to ♀, but with black parts of plumage brownish. L., 34.00; W., 13.50; T., 10.50; B., 3.25. (Chap., *Birds of E. N. A.*)

Range.—Tropical America from North Carolina and southern Illinois southward.

Range in North Carolina.—So far only known from the extreme southeastern county of the State.

"While approaching a colony of herons in Tom Branch on the Orton plantation, fifteen miles below Wilmington, June 7, 1898, a Water-Turkey was flushed from its nest in a cypress-tree about ten feet above the water. The bird flew rapidly away for perhaps thirty rods, then, turning, came driving back overhead, only to return shortly from the opposite direction. At each approach it appeared higher in the air until at a considerable altitude, when it began to circle on motionless

wings. It was a male in magnificent plumage. Another male bird was seen the same day, but no females were observed, nor were other nests found.

"The nest examined was a heavy structure of sticks and twigs, lined with gray moss (*Tillandsia usneoides*). It contained four much incubated eggs. I am aware of no previous record of the bird breeding north of South Carolina. In June,

Fig. 27. Water-Turkey.

1904, I again found the Anhinga on Orton Pond, three birds being observed, but no nest found. It would not be surprising if the Water-Turkey should be found breeding in suitable localities in Brunswick and New Hanover counties, although much hunting for them by H. H. Brimley and myself has thus far been without further results."—Pearson.

10. FAMILY PHALACROCORACIDÆ. CORMORANTS

But one genus of this family exists in North Carolina, and is represented in the State by one species with two geographical races. Cormorants are large black or dark-brown birds, with short, stout, legs and long, heavy necks. The beak is long and sharply hooked. As a rule, they are maritime, but they also frequent bodies of fresh water. They procure their living by diving and pursuing their prey under water.

Genus Phalacrocorax (Briss.)

Represented in our State by two closely allied forms differing only in size and in time of occurrence.

34. Phalacrocorax auritus auritus (*Swains.*). DOUBLE-CRESTED CORMORANT.

Ads. in breeding plumage.—Head, neck, rump and underparts glossy black; upper back, scapulars, and wing-coverts light grayish brown, each feather margined with glossy black; tail black, composed of *twelve feathers;* a tuft of black feathers on either side of the head; a few white ones over the eye. *Ads. in winter.*—Similar, but without tufts on the head. *Im.*—Top of the head and back of the neck blackish brown; upper back, scapulars, and wing coverts brownish gray, each feather margined with black; rump glossy black; sides of the head and foreneck grayish white, whiter on the breast and changing gradually to black on the lower belly. L., 30.00; W., 12.50; T., 6.20; B., 2.30. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding from Nova Scotia and Saskatchewan northward; winters from North Carolina southward to the coast of the Gulf of Mexico.

Range in North Carolina.—Coastal region in winter; occasionally inland.

FIG. 28. DOUBLE-CRESTED CORMORANT.

These are the common cormorants on our coast in winter, where they are often seen perched on stakes set by the fishermen to hold their nets or to mark the various channels through the shallow sounds. As evening comes they congregate in flocks of from ten to forty individuals, and in solid ranks go flying low over the water to some favorite "lump" of shell, or small sandy island, on which to roost. One evening early in April, 1898, Pearson dug a hole in the shells of a miniature island in Wysocking Bay, Hyde County, where, lying concealed, he was enabled to watch unobserved the hundreds of cormorants which came there to roost. Without exception the flocks all pitched in the water a short distance away, and later swam leisurely ashore. Cormorants are much disliked by fishermen, who declare that the birds enter their pound-nets and prey upon the valuable fish.

1. A typical tree in the Cormorant rookery. The small cypress pictured contains twenty-eight occupied nests.
(Photo by H. H. Brimley.)

2. Nest of Bald Eagle. This nest is near the top of a very tall pine, growing in a thick swamp, two or three hundred yards from the shores of White Lake, Bladen County. The nest is very large, having been added to year after year. It is approximately a hundred feet from the ground, and the birds are reputed to have nested in this tree, or nearby, for fifty years or more.
(Photo by T. W. Adicks.)

35. Phalacrocorax auritus floridanus (*Aud.*). Florida Cormorant.

Description.—Similar to the Double-crested Cormorant, but averaging smaller. L., 21.00 to 30.00; W., 11.25 to 12.50; T., 5.50; B., 2.10.
Range.—Breeds from North Carolina southward; winters from South Carolina southward.
Range in North Carolina.—Coastal region in summer; breeds.

On May 25, 1898, Pearson discovered what, so far as yet known, is the only breeding-colony of these birds north of Florida. It is situated on the shores of Great Lake in Craven County, and at that date contained one hundred and fifty occupied nests. Although the birds are unmolested by man, their numbers since that date have been slowly decreasing, and in 1908 the colony numbered only one hundred and twenty nests. In 1911, however, they seemed to have regained their former numbers, and no less than one hundred and fifty-nine nests were counted by H. H. Brimley. In 1910 and 1911 the colony divided, the two sections being situated about five miles apart on opposite sides of the lake.

The nests are usually placed in cypress trees growing in the water at a short distance from the heavily wooded shore. The site, however, has been changed four times in the past twelve years, once from the north to the east side of the lake, a distance of five miles, and again in 1908 to the southwest side, probably three miles farther away. In this last locality the majority of the nests were placed in pine trees growing on the shore. Since then the colony has moved twice more, each move being into cypress trees standing in the water. The frequent change of place appears to be occasioned by the fact that a few years occupancy by the birds kills the trees in which they nest.

The food of these Cormorants must consist largely of eels, as eel-remains are constantly found in the nests and on the limbs of the trees, and the young when alarmed disgorge copiously fragments of partly digested eels. In the summer of 1905 H. H. Brimley saw an immature bird disgorge a portion of a large water-snake (*Natrix taxispilota*).

A flock of about fifty of these birds was seen by Pearson one evening in June, 1899, coming to roost in Jones's Millpond in Carteret County. Perhaps this number also roost each summer in the trees of Orton Pond, Brunswick County. Probably these are all unmated birds.

11. FAMILY PELECANIDÆ. PELICANS

Only one genus occurs in North America. The pelicans are large, aquatic birds with enormous bills. The broad space between the forks of the lower mandible is occupied by a huge sack or bag of naked skin, which the bird uses when fishing, somewhat after the manner of a scoop-net.

Genus Pelecanus (Linn.)

KEY TO SPECIES

1. Color mainly white, with black wing-quills. *White Pelican.*
1. Color grayish and brownish. *Brown Pelican.*

36. Pelecanus erythrorhynchos (*Gmel.*). WHITE PELICAN.

Ads. in nuptial plumage.—White, more or less straw-color on breast and wing-coverts; wing-quills chiefly black; occipital crest white or straw-color; a horny prominence on the culmen. *Post-nuptial plumage.*—Similar, but occiput of short gray feathers, no horny ridge on bill. *Ads. in winter.*—Similar, but occiput white. *Im.*—Similar, but lesser wing-coverts and top of the head brownish gray. L., 60.00; W., 22.00; Tar., 4.50; B., 14.00. (Chap., *Birds of E. N. A.*)

Range.—Temperate North America, breeding mainly north of the United States; winters from the Gulf States southward.

Range in North Carolina.—Occasional during the migrations.

FIG. 29. WHITE PELICAN.

This great bird is of very rare occurrence in North Carolina. We have in fact only three records for the State, which are as follows: At Raleigh, one was shot on the State carp-ponds, May 12, 1884, by J. H. Coover. In Buncombe County, a flock of forty was seen on the French Broad River in May, 1889; five of these were shot, and two passed into the possession of Cairns. One was taken by J. H. Bigham near Sloan's Ferry on the Catawba River, October 2, 1907 (Charlotte Evening Chronicle, October 3, 1907.)

37. Pelecanus occidentalis (*Linn.*). BROWN PELICAN.

Ads. in breeding plumage.—Top of head white, sometimes straw-yellow like a spot on upper breast; line down either side of breast white; hindhead, neck and a spot on foreneck seal-brown; sides and back silvery gray bordered by brownish black; scapulars, wing-coverts, secondaries, and tail silvery gray; primaries black; underparts dark blackish brown narrowly streaked with white. *Ads. after the breeding season.*—Similar, but with hindhead and whole neck white, more or less tinged with straw-yellow. *Im.*—Above grayish brown margined with paler; chest brownish, belly white. L., 50.00; W., 19.50; Tar., 2.65; B., 11.00. (Chap., *Birds of E. N. A.*)

Range.—Ranges in summer from North Carolina southward. Breeds from South Carolina southward to Brazil.

Range in North Carolina.—Sounds of the coastal region regularly in summer.

The Brown Pelican is in appearance by far the most conspicuous summer bird of our coast. Being over four feet in length, and with an expanse of wings of six and one-half feet, it presents an object attracting the attention of the most casual observer. When fishing, the Brown Pelican flies slowly along at an altitude of from twenty to thirty feet, and dives for its prey with a heavy splash. Below the bill hangs a pouch capable of holding, when fully distended, about four gallons of water. Into this capacious receptacle are gathered the unfortunate fish which go to make up a Pelican's dinner. Without rising from the sea, the bird forces the

Fig. 30. Brown Pelican.

water from its mouth by contracting the pouch, and, with bill pointed upward at a sharp angle, the fish are forced downward. Fish weighing two or three pounds are said to be eaten by this bird, but usually smaller ones are chosen. Our Pelican often goes fishing by himself; but at times, when the run of fish is good, a number of birds may be seen engaged in securing their livelihood in the same neighborhood. During flight from one resting or feeding ground to another they often go in flocks of from four to a dozen birds. They proceed low over the water, their wing-tips almost touching the rolling waves. After sailing a short distance, the leader slightly rises in order to avoid striking the water, and vigorously flaps his wings for several

strokes. The second bird follows the example, and the movement is gradually imitated along the column. By the time the rear bird has received the impulse the leader is generally sailing again near the surface. The undulating motion given to a long line of Pelicans by these movements presents a spectacle which at a distance suggests a brown sea-serpent disporting itself along the crests of the waves.

As breeding-birds, Brown Pelicans are not known north of Cape Romain, South Carolina. Of recent years hundreds regularly pass the summer in the neighborhood of the small sandy islands lying in Pamlico Sound between Ocracoke and Cape Hatteras, and they occur scatteringly on the sounds from there to the South Carolina line.

FIG. 31. MAN-O'-WAR BIRD.

12. FAMILY FREGATIDÆ. MAN-O'-WAR BIRDS

Genus Fregata (Lacep.)

38. Fregata aquila (*Linn.*). MAN-O'-WAR BIRD.

Ad. ♂.—Entire plumage black, more glossy above; dilatable gular pouch in breeding season orange-red or carmine. ♀.—Similar, but browner; lesser wing-coverts grayish brown; breast and upper belly white. *Im.*—Similar to the ♀, but whole head and neck white. L., 40.00; W., 25.00; T., 17.00; B., 4.50. (Chap., *Birds of E. N. A.*)

Range.—Tropical and subtropical coasts.

Range in North Carolina.—Occasional off shore in coastal region.

The Man-o'-war Bird, or Frigate Bird, is one of the most marvelous flyers in the world. With an expanse of wings of over seven feet, it sweeps the seas far and wide in quest of food, or for mere diversion. Its flight is graceful beyond description, and at times it will hang long in the teeth of a gale, or falling off before it with scarcely a perceptible motion of the wing will sweep down to the surface of the ocean as a swallow skims a summer millpond. Its food consists of fish, which it not only captures itself, but at times secures by pursuing various sea-birds and causing them to disgorge their recently caught prey.

On July 5, 1899, Pearson obtained a specimen in Pamlico Sound near Ocracoke Inlet. It was a splendid young male, measuring between wing-tips seven feet and seven inches. Its mounted skin is now preserved in the State Museum at Raleigh. This is our first North Carolina record of the Man-o'-war Bird. Our only other record follows.

Extract of letter from Russell J. Coles, Danville, Va., to Mr. John T. Nichols, American Museum of Natural History, New York City:

"On July 10th, 1917, I and members of my crew watched for some time a Man-o'-war Bird attempting to fly against a heavy wind squall. The bird appeared very much exhausted as it came in from the sea against the wind, and again and again it was beaten back, and it appeared that it wished to light on the boat and at last, when it appeared that it was about to do so, when one of my crew struck at it and in dodging the blow, the bird fell in the sea along-side and was lifted into the boat. I kept it on board for half a day, and although at first, it was too weak to show the usual aggressive spirit of its species, yet when it became rested, it became very pugnacious and struck at all who approached it with beak and wings. Finally, I released it after measuring and photographing, and it flew away to the south. From tip to tip of wings, it measured 7 feet, 4 inches." This incident occurred near Cape Lookout.

V. ORDER ANSERES. LAMELLIROSTRAL SWIMMERS

13. FAMILY ANATIDÆ. DUCKS, GEESE, AND SWANS

"We now come to a group of birds which excites in the naturalist, sportsman, and the general public a greater degree of interest, perhaps, than any other.

"A wedge of Wild Geese steadily winging its way through the upper air currents in spring or fall, the sudden noisy rise of a beautiful male Wood Duck as the angler quietly works his way up a woodland stream, a raft of sea-ducks seen on sound, estuary, or at sea, the evening flight of Mallard or Black Duck from river to pond—all these, and more, are experiences at times vouchsafed to those who love the outdoors and frequent the silent places. To those who have opportunities, however small, to seek these denizens of the water and marsh with gun and game bag, nothing else in the way of hunting with firearms can quite equal the joy of wildfowling.

"In certain sections of North Carolina we are greatly favored with opportunities for experiences with ducks, geese, and swans. Currituck Sound supports during the winter months more wildfowl, perhaps, than any other equal area in eastern North

America. The great Whistling Swan occurs there regularly in hundreds, if not thousands; Canada Geese in tens of thousands, while such raft-ducks as Lesser Scaup, and Redhead pass the winter there in incredible numbers. The Canvas-back is more or less common, though much more rare than a few years ago, and the same may be said in regard to the Ruddy Duck. The other sea-ducks, and the Brant, are only stragglers on this fresh-water sound, but the river-ducks that do not raft, such as Mallard, Black Duck, Baldpate, both eastern Teals, Gadwall and Pintail, are common feeders on the marsh ponds and creeks.

"On Pamlico and Core sounds geese and brant are very numerous. The raft-ducks on these lower sounds are mostly Redhead and Scaup, with large numbers of Scoters, Mergansers, Buffleheads, Old Squaws, Lesser Scaup, and a few of the fresh-water ducks, the abundance and admixture of species depending on the character of the locality. On the inside shoals and reefs, from Gull Shoal Island south and west to Core Sound, more geese and brant gather, perhaps, than at any other point on the coast of the United States.

"The smaller sounds, the great estuaries—with their creeks and marshes—the rivers, lakes, and ponds of the eastern section of the State, are the winter homes and feeding grounds for many species, the varying natural conditions and food supply governing their abundance from day to day and from year to year.

"Of late years, an acquired habit of many of the fowl inhabiting these waters is doing more to preserve their numbers than any legal or other artificial method yet attempted. This is the custom of feeding at night and leaving at dawn to spend the day on the open sea, where the proximity of the ocean makes this refuge available, or on some other open, deep-water sanctuary when the sea is too distant.

"On the broad waters, ducks, geese, and swan are shot mainly from batteries, the old-style coffin-box outfit having given way in some localities to the 'sit-up' battery. This latter has a wing arrangement similar to the old style, but, as the name implies, the box itself is of such size and shape, and so arranged and ballasted, as to enable the gunner to await the fowl in a sitting position instead of lying flat on his back. The decoys, two or three hundred in number, are arranged as formerly, mostly to the leeward of the box.

"On the marsh, and on many of the shooting points on the creeks and rivers, bush or reed blinds are used, with a much smaller stand of decoys. When Mallard or Black Duck are flying in broken bunches, from half a dozen to twelve or fifteen decoys are often sufficient, particularly if two or three live birds are added to the display. In goose shooting from blinds, live decoys are becoming more and more common. Wooden or other artificial decoys for geese are extremely cumbersome to handle, and most of those supplied are of doubtful utility. Two or three good talking 'honkers' are worth more than a boatload of wooden 'idols.'

"On Pamlico Sound, from a little above Cape Hatteras down to Core Sound, box blinds are mostly used. Some gunners sink a 'goose box' on the dry shoals, in close proximity to the water, and stake out their live decoys in the shallow water close at hand. Occasionally a 'rolling blind' may be found. This is a box on rollers, and is set up on the dry shoal well away from the decoys. When geese

come in, the blind, which has no bottom, is carefully and slowly worked forward until within shot of the geese. The stationary box-blinds are three and a half or four feet square and are supported by posts five or six feet above the water. These are usually fringed with reeds or rushes around the upper edge. Placed, as they are, at the first of the season, the fowl soon become accustomed to them, and feed near without fear.

"It is indeed an interesting experience to spend the greater part of a day alone in one of these frail structures, with a half gale blowing out of the frozen north and the attendant boatmen drifting a mile or more away. A large stand of wooden decoys is used from these blinds, a hundred and fifty ducks and fifty brant forming an average outfit. The fowl that fall to the gunner's skill are later picked up by the attendant. Often a few live geese are used in conjunction with the 'idols,' and these prove very effective when any wild geese are flying. Geese and brant are the fowl mostly killed from this type of blind, the salt-water ducks frequenting this part of the sound feeding in deeper water.

"They have a saying in the Cape Hatteras region, 'Weather to kill fowl is weather to kill men!' This, however, must not be taken too literally. My own experience, and that of many old wildfowlers with whom I have talked, is that medium bad weather is much more likely to be productive of results than the extremes of wind and cold. One day I remember being in a blind during a howling northeast gale, when a single, solitary Brant made up the total of my bag, though thousands were feeding within sight the whole of the time I remained in the blind.

"Some cloudiness, a modicum of wind, with a drizzle of rain or light snow, and one need not wish for more wind, cold, or downfall to help out his bag. Some days just happen to be good, irrespective of the weather, while on others the fowl will not draw to any character of decoys, no matter how favorable the conditions seem.

"Wildfowl are most uncertain in their day movements, and the only general rule that I can advance that may be almost always depended on is that, on good shooting grounds, there are strong probabilities of excellent sport during the first few days after the season opens. There may be, and often are, many good days later on, but no one can foretell them, and it is the hunter who goes early and often who is most likely to meet with reward."—H. H. BRIMLEY.

KEY TO GENERA

1. Neck not shorter than body; color white. (Swans.)
1. Neck shorter than body. See 2.
2. Tarsus reticulate all around, not shorter than middle toe without claw. (Geese.) See 3.
2. Tarsus scutellate in front, shorter than middle toe without claw. (Ducks.) See 5.
3. Bill and feet black; head more or less black. *Branta.*
3. Bill and feet pale; head not black. See 4.
4. Bill very stout, its depth at base more than half its length; color largely white. *Chen.*
4. Bill smaller, its depth at base not half its length; color mostly brownish gray. *Anser.*
5. Bill narrow, the edges of the mandibles serrated. (Fish Ducks.) See 6.
5. Bill broad, more or less of the ordinary duck shape See 6a.
6. Serrations of both mandibles very conspicuous, toothlike, strongly recurved at tips. *Mergus.*
6. Serrations of both mandibles short, blunt, and not recurved at tips. *Lophodytes.*
6a. Lower portion of tarsus not scutellate in front. (Tree Ducks.) *Dendrocygna.*
6a. Lower portion of tarsus scutellate in front. See 7.

7. Hind toe without a distinct membranous lobe. (River Ducks.) See 8.
7. Hind toe with a broad membranous lobe. (Sea Ducks.) See 15.
8. Bill spoon-shaped, very narrow at base and broad at tip. *Spatula.*
8. Bill not spoon-shaped. See 9.
9. Tail-feathers broad, rounded at tips. Male with a large crest. *Aix.*
9. Tail-feathers narrow, rather pointed; no crest. See 10.
10. Tail pointed, the middle feathers much longer than the others. Tail of 16 feathers. *Dafila.*
10. Tail not much pointed, middle feathers not much longer than the rest. See 11.
11. Culmen longer than middle toe without claw. See 12.
11. Culmen shorter than middle toe without claw. See 14.
12. Speculum violet, bordered with black. Length more than 20. *Anas.*
12. Speculum green; length less than 20. (Teal.) See 13.
13. Wing-coverts sky-blue. *Querquedula.*
13. Wing-coverts leaden gray without blue. *Nettion.*
14. Lamellæ of bill very fine, more than 30 visible from outside. Bill not shorter than head. *Chaulelasmus.*
14. Lamellæ coarser, less than 15 visible externally. Bill shorter than head. *Mareca.*
15. Tail more than half length of wing, its feathers with narrow webs, and very stiff shafts, their bases hardly concealed by the very short tail-coverts. *Erismatura.*
15. Tail-feathers not as above, their bases well hidden by the coverts. See 16.
16. Feathering on forehead or lores reaching in front to or beyond hind end of nostril. Bill swollen at base and with large frontal processes. No speculum. *Somateria.*
16. Feathering on lores or forehead not reaching forward of hind edge of nostril. See 17.
17. Graduation of bill less than length of bill from nostril; width of nail of bill not more than one-third width of bill at middle. *Marila.*
17. Graduation of tail much more than length of bill from nostril. See 18.
18. Bill swollen at base, with a large fused nail, and no frontal appendages. *Oidemia.*
18. Bill ordinary, not swollen nor appendaged. See 19.
19. Nail of bill large, fused. Tail in male with its middle feathers very much lengthened. No speculum. *Harelda.*
19. Nail of bill narrow, distinct, tail moderate. See 20.
20. Nostril anterior, its front much nearer to the tip of the bill than to the loral feathers. Eyes yellow. *Clangula.*
20. Nostril sub-basal, its front much nearer to the loral feathers than to tip of bill. Eyes brown. *Charitonetta.*

Genus Mergus (Linn.)

KEY TO SPECIES

Contains two North American species:

1. Nostril nearer middle of bill than base. *Merganser.*
1. Nostril near base of bill. *Red-breasted Merganser.*

39. Mergus americanus (*Cass.*). MERGANSER; SHELDRAKE.

Ad. ♂.—Whole head and upper neck glossy greenish black; hindneck, secondaries, lesser wing-coverts, and ends of greater ones white; back black, rump and tail ashy gray; breast and belly white, delicately tinged with salmon. *Ad.* ♀ *and Im.*—Chin and upper throat white; lower throat and entire top of the head rufous-brown; rest of upperparts and tail ashy gray; speculum white; breast and belly white. L., 25.00; W., 10.50; Tar., 1.86; B., from N. 1.50. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding chiefly in Canada, wintering in most portions of the United States and southern Canada.

Range in North Carolina.—Coastal region in winter, but may appear at that season wherever there are large bodies of water.

The Sheldrakes are inhabitants of the trout streams and lakes of Canada, well known to the *voyageurs* of those inland waters. Here they breed, hiding their nests in the hollows of trees, and, it is said, taking their young to the earth in their bills or sometimes allowing them to fall, the little ones working their wings to break the force of the descent. In feeding, they swim rapidly beneath the surface, often in the face of a strong current, and grasp their prey with their long serrated bills.

MERGANSER. Mergus americanus (Cass.) Male and Female.

As the fresh waters of the North become frozen in autumn, the Mergansers move gradually southward and frequent mainly the large open bodies of our bays and sounds. Feeding, as they apparently do, almost entirely upon fish, their flesh is not greatly esteemed for food, and hence the birds are seldom shot by gunners if other fowl are to be found in numbers. This does not appear to be an abundant species in North Carolina. While Pearson was a guest at the Currituck Shooting Club in March, 1904, his host, W. T. Post, of New York, shot a pair of these handsome birds. For thirty years Mr. Post had been shooting in Currituck Sound, but could not recall having previously seen them. The Sheldrake, however, is not so rare in the lower sounds, and may frequently be found in the markets at New Bern. Cairns reported it as not an uncommon spring transient in Buncombe County. H. H. Brimley secured a female at White Lake, in Bladen County, during December, 1911.

It has many local names, such as Goosander, Saw-Duck, Saw-Bill, Breakhorn, and Fisherman Duck.

40. Mergus serrator (*Linn.*). Red-breasted Merganser.

Ad. ♂.—Whole head and throat black, more greenish above; a white ring around neck; *a broad cinnamon-rufous band with black streaks* on the upper breast and sides of lower neck; lesser wing-coverts, tips of greater ones, secondaries, breast and belly white; rump and sides finely barred with black and white. *Ad.* ♀ *and Im.*—Top and back of head grayish brown washed with cinnamon-rufous; sides of head and throat cinnamon-rufous, paler on throat; rest of underparts white; back and tail ashy gray; speculum white. L., 22.00; W., 9.00; Tar., 1.70; B. from N., 1.80. (Chap., *Birds of E. N. A.*)

Range.—Northern part of Northern Hemisphere.

Range in North Carolina.—Chiefly coastwise in winter.

Fig. 32. Red-breasted Merganser (adult male).

Slightly smaller than the preceding species and, to the minds of some, not so richly colored, the common "Fisherman" Duck of our coast may nevertheless lay claim to being a most handsome fowl. Its summer home is in much the same region as the Sheldrake, but, unlike that bird, it makes its nest on the ground. While shooting over brant decoys in Pamlico Sound we have noticed that although

other ducks occasionally draw near with apparent intention of alighting among them, these mergansers always settled at some little distance away. In fact, their actions on such occasions have even left a doubt with us as to whether the decoys were really the occasion of their approach. In some places, however, decoys are specially painted to be used in hunting this bird when other ducks become scarce. In flight they present an easy mark, but when resting on the water it is a far more difficult task to shoot them, so low do they sit in the water. They arrive on the North Carolina coast in October and usually depart in April.

The flesh is strong-tasting and fishy and not highly regarded as food, but a great many are killed, nevertheless, during the early spring, which is the season of their greatest abundance. There is a saying on Cape Hatteras, "One old Fisherman Duck will make nine gallons of soup"—a tribute indeed to the potency of the highly flavored flesh.

Sherman and H. H. Brimley observed Red-breasted Mergansers daily for a week on White Lake in Bladen County during December, 1910. On one occasion several stooled to Black Duck decoys.

Genus Lophodytes (Reichenb.)

41. Lophodytes cucullatus (*Linn.*). HOODED MERGANSER.

Ad. ♂.—Front part of large circular crest black; remaining part white, bordered by black; rest of head, the neck and back black; breast and belly white; sides cinnamon-rufous, finely barred with black. *Ad.* ♀.—Upper throat white; head, neck and upper breast grayish brown, more or less tinged with cinnamon, especially on the small crest; lower breast and belly white;

FIG. 33. HOODED MERGANSER (adult male).

sides grayish brown; back fuscous. *Im.* ♂.—Similar, but throat blackish. L., 17.50; W., 7.50; Tar., 1.10; B., 1.45. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding locally throughout its range, but quite rare and local in the breeding season in the South.

Range in North Carolina.—Whole State in winter, most common on the coast.

This, the smallest of the North American Mergansers, is an exceedingly striking bird. The fan-shaped crest of finely pointed feathers has given rise to the name "Hairyhead," by which it is widely known. In the male this crest is white with a black outer border, thus furnishing a conspicuous mark for identification even at a distance. Although known to breed occasionally in the South, its nest is seldom met with in eastern North America below New York and Indiana. In the autumn they may be found in pairs or small flocks on the lakes and millponds. In Currituck Sound they gather each year in considerable numbers, as well as in the bays and river mouths farther south, seeming to shun at all times the open sounds. Unlike our other mergansers, they apparently care but little for swift-running streams. Their food consists to some extent of seeds and roots, and at times their flesh is very palatable. Specimens were taken at New Bern, January 8, 1885; Raleigh, November 24, 1888, and January 31, 1908 (H. H. Brimley); Guilford County, April 8, 1892 (Pearson); and Dare County, December 19, 1908 (Bishop).

In December, 1910, Sherman and H. H. Brimley saw several small bunches, aggregating from fifty to a hundred individuals, on White Lake in Bladen County. These flocks were in evidence daily for a week, and the birds stooled—not very readily, however—to Black Duck decoys. Several specimens were secured.

In November and December, 1911, this species was constantly seen on Lake Ellis, and bunches of one or two dozen birds were often noticed. In fact, this was the most plentiful duck on the lake, next to Mallard and Black Duck.

In January, 1911, H. H. Brimley observed five on Lake Ellis, feeding by diving in water not more than ten inches in depth. Frequently three out of the five were under water at the same time. He paddled up to within thirty yards of them before they took flight.

Genus Anas (Linn.)

KEY TO SPECIES

1. Speculum edged with white, sexes unlike. *Mallard.*
1. Speculum without white, sexes very similar. *Black Duck.*

42. Anas platyrhynchos (*Linn.*). Mallard.

Ad. ♂.—Whole head and throat glossy greenish or bluish black; a white ring around the neck; breast rich chestnut; belly grayish white, finely marked with wavy black lines; under tail-coverts black; upper back dark grayish brown; rump and upper tail-coverts black; four middle tail-feathers recurved; speculum rich purple, bordered at the *base* and tip by narrow bands of *black and white. Ad.* ♀.—Top and sides of head streaked with fuscous and buffy; back fuscous, the feathers with internal rings or loops and sometimes borders of pale ochraceous buffy; speculum as in the preceding; breast and belly ochraceous buffy, mottled with dusky grayish brown. L., 23.00; W., 11.00; Tar., 1.75; B., 2.25. (Chap., *Birds of E. N. A.*)

Range.—Whole of Northern Hemisphere, breeding from the northern half of the United States northward.

Range in North Carolina.—Whole State in winter.

The most widely known duck of the Northern Hemisphere is the Mallard. Wherever grassy lakes, millponds, or sluggish streams occur, it is likely to be found. Breeding usually in the North, that great nursery of wildfowl, Mallards reach the South upon the approach of winter and afford excellent shooting. In the brackish water marshes and in the rice-field country of the Carolinas they

congregate in great numbers. Being universally esteemed as choice birds for the table, it is little wonder that this species has long been domesticated. Our tame ducks, however, rarely exhibit the fine appearance of plumage and activities so characteristic of their wild kindred. The Mallard is supposed not to nest in North Carolina, although one need not be greatly surprised to find a pair of cripples thus engaged. A reliable farmer of Guilford County reported that he found a Mallard's egg late in the spring of 1909 on a creek bank much frequented by the birds just before their departure for the season. The weight of a wild Mallard is about two and one-half pounds, and exceptionally large and well-conditioned specimens will sometimes tip the scales at three pounds or more.

FIG. 34. MALLARD (adult male).

A favorite among fresh-water duck shooters, the Mallard comes readily to decoys, but usually it is a suspicious bird, and the blind and the decoys should be properly placed and the gunner well hidden and motionless to insure success.

43. Anas rubripes (*Brewster*). BLACK DUCK.

Ads.—Top of head rich fuscous, slightly streaked with pale buffy; sides of the head and throat pale buffy, thickly streaked with blackish; rest of underparts fuscous-brown, the feathers all bordered by ochraceous-buff; back slightly darker and narrowly margined with buffy; speculum rich purple, bordered by black, and, at the *end only*, narrowly by white. L., 22.00; W., 11.00; Tar., 1.75; B., 2.20.

Remarks.—Always to be distinguished from the female Mallard by its darker colors and smaller amount of white in the wing.

Range.—Eastern North America, breeding somewhat more southerly than the Mallard.

Range in North Carolina.—Whole State in winter, and apparently also breeds in portions of the coastal region.

The Black Duck is another favorite of the fowler. It inhabits the coast region in great numbers, usually being found either singly or in small flocks. They feed much at night, and in their quest for food shovel the mud about so vigorously that the bottom when exposed by daylight often presents the appearance of having been visited by a drove of rooting hogs.

It is usually a far shyer bird than the Mallard and very much more suspicious of a blind and stand of decoys. On a certain shooting ground familiar to the writers, where Black Ducks feed at night by thousands, the birds that come to the decoys have a habit of circling over the stool several times before deciding to alight. Many a time the crouching hunter watching a bunch come in hears the measured wing-

Fig. 35. Black Duck.

strokes overhead suddenly break into a louder and quicker, *whish, whish, whish,* as the wary birds, noting some suspicious object or movement, start to "climb" into the safer air-levels above. It takes a quick jump and a quicker shot to down a wise old Black Duck under such conditions.

The following remarks by J. C. Philipp are quoted by Brewster in his article on "The Red-legged Duck" in *The Auk* of July, 1910, pp. 328–329: "While at Currituck last Christmas I was very much struck by the preponderance in our bags of very large winter (black) ducks. I weighed a large number and many went six pounds to the pair. I shot numbers of Black Ducks in the same region twelve years ago, and then we were always surprised to see any of these big ducks. Gunners have spoken to me of the same thing—that is, a change in the type of Black Duck during the last few years at Currituck."

Like the Mallard, this species appears each year to be acquiring more wisdom in the matter of avoiding its human enemies. Few marks are more difficult to the gunner than a Black Duck when it springs suddenly from the water and begins climbing rapidly upward. Seldom does this wary bird today present a straight-away shot. Repeated rumors come from the North Carolina coast that the wild Black Duck breeds sparingly in that region, but until the present time it has been found impossible for us to have these statements verified with specimens, or by the observations of ornithologists.

Jasper White, writing from Waterlily, N. C., in *Forest and Stream* for August 6, 1910, remarks: "We often see young Black Ducks, Wood Ducks, and Mallards." Black Ducks arrive in North Carolina in October and depart in March and April.

Genus Chaulelasmus (Bonap.)

44. Chaulelasmus streperus (*Linn.*). GADWALL.

Ad. ♂.—Top of head streaked with rufous-brown and black; sides of head and neck pale buffy, thickly streaked or spotted with black; breast and neck all around black, each feather with a border and an internal ring of white, giving the plumage a beautifully scaled appearance; belly white or grayish; rump, upper and under tail-coverts black; lesser wing-coverts *chestnut*. *Ad.* ♀.—Head and throat as in male; back fuscous margined with buffy; breast

FIG. 36. GADWALL.

and *sides* ochraceous-buffy, thickly spotted with blackish; belly and under tail-coverts white, more or less thickly spotted with blackish; little or no chestnut on wing-coverts; speculum ashy gray and white; axillars and under wing-coverts *pure white*. L., 19.50; W., 10.40; Tar., 1.55; B., 1.70. (Chap., *Birds of E. N. A.*)

Range.—Nearly the whole world, breeding in America from the northern United States northward.

Range in North Carolina.—Coastal region in winter.

The "Gray Duck" does not appear to be a very abundant species, and particularly is this the case along the Atlantic coast. A good many are shot each season in the Dakotas and elsewhere in the interior, but they seem much more rare in the Eastern States. Coues in 1871 reported them as common in winter at Fort Macon. Bishop recorded one at Pea Island, March 5, 1906.

The species is well known on Currituck, where it goes by the name of "Creek Duck," though it is by no means abundant there. On Lake Ellis it seems to occur regularly, though not commonly. H. H. Brimley killed one there in the fall of 1906, and took two more on November 1, 1911. On this latter date an additional specimen was secured by another member of the party.

As it mostly occurs with us in the winter plumage, it is usually passed over in a bunch of dead fowl as a small female Mallard, and its abundance is, therefore, probably greater than our scanty records would indicate.

Genus Mareca (Steph.)

KEY TO SPECIES

1. Head and neck rusty or rufous. *European Widgeon.*
1. Head and neck whitish or creamy. *Baldpate.*

45. Mareca penelope (*Linn.*). European Widgeon.

Ad. ♂.—Crown creamy buff; throat blackish, rest of head and neck rufous-brown; upper breast vinaceous, lower breast and belly white; *sides* and back finely marked with wavy black and white lines. *Ad.* ♀.—Head and throat deep ochraceous-buff, finely streaked and barred with black, darker above; upper breast and sides much the same color, but without black markings; lower breast and belly white; back grayish brown, the feathers with small ochraceous buffy bars; tertials fuscous, bordered by deep *ochraceous buffy*; greater wing-coverts *brownish gray*, usually whiter on the outer webs and tipped with black. W., 10.50; B., 1.40.

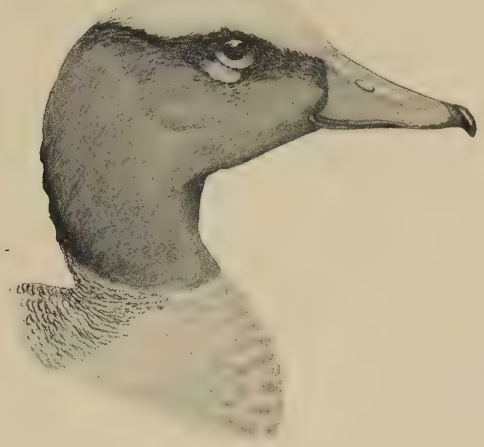


Fig. 37. European Widgeon (adult male).

Remarks.—The females of the European and American Widgeons bear a general resemblance to one another. Their distinguishing characters are mainly in the color of the head and throat, which are browner in the European species, and in the color of the greater wing-coverts, which are whiter in the American bird. (Chap., *Birds of E. N. A.*)

Range.—Northern portions of Old World, occasional in America.

Range in North Carolina.—Has been taken in Currituck Sound.

This wanderer from the Old World is rare in the United States, and when found is usually in company with the American Widgeon. It is of accidental occurrence

in North Carolina. One was taken on the property of the Currituck Shooting Club in 1887. Another specimen was killed by L. C. Fenno in Currituck Sound, November 23, 1900. (*Auk*, Vol. XIX, p. 76.)

46. Mareca americana (*Gmel.*). BALDPATE.

Description.—Much like the European Widgeon, but head and neck whitish, speckled with black, top of head white; sides of head with bright green patch. Female duller. L., 18.00-22.00; W., 10.00-11.00.

Range.—North America, breeding mainly north of the United States.

Range in North Carolina.—Coastal region in winter.

FIG. 38. BALDPATE (adult male).

The Baldpate or "Widgeon" is well known to gunners of the coast, where it is found in many bodies of fresh or semi-salt water. Numbers of them frequently come on shore to rest and preen their feathers, but the wary birds are continually on the lookout, and rare it is that the hunter can surprise them while thus engaged. Often when feeding among the rushes they may be located by their oft-repeated notes uttered to their companions in an agreeable conversational tone. The Baldpate is fond of wild celery. This it is said to be quite dexterous in securing by robbing Canvasbacks and other diving-ducks of their gleanings. Widgeons are commonly found among the wildfowl bought for shipment in Currituck. A male taken at Raleigh, November 12, 1891, is the only inland occurrence of which we have any knowledge.

Genus Nettion (Kaup.)

KEY TO SPECIES

1. A white crescent on side in front of wings in male. *Green-winged Teal.*
1. No white crescent on side in front of wings in male. *European Teal.*

The European Teal, *Nettion crecca* (Linn.), is similar to the next species, and the male is distinguished from it chiefly by the absence of the white crescent on side in front of wings. Female and immature specimens are not distinguishable with certainty from the other species. It is accidental in America, and as North Carolina is a great resort for wildfowl, it may possibly occur here.

47. Nettion carolinense (*Gmel.*). GREEN-WINGED TEAL.

Description: Ad. male.—Chin black, sides of head from eye to nape shining green, rest of head and neck rufous-chestnut; breast washed with vinaceous and spotted with black; belly white; sides finely marked with wavy black and white lines; middle under tail-coverts black, lateral ones creamy buff; upper back like sides, lower back grayish fuscous; a white bar in front of the bend of the wing; wing-coverts brownish gray, tipped with ochraceous buffy. *Ad. female.*—Top of head brownish fuscous, margined with cinnamon; throat and sides of neck white, finely spotted with black; breast and sides washed with cinnamon and spotted or barred with black; belly and under tail-coverts white, sometimes spotted with black; back fuscous, the feathers with crescent-shaped marks of ochraceous buffy, and bordered with grayish; wings as in the male. L., 14.50; W., 7.00; Tar., 1.10; B., 1.35. (Chap., *Birds of E. N. A.*)

Range.—Whole of North America, breeding mainly north of the United States.

Range in North Carolina.—Whole State in winter.

FIG. 39. GREEN-WINGED TEAL (adult male).

This, one of the smallest of our ducks, is also one of the first to appear in the autumn. Coues reports them as arriving at Fort Macon in August, and further states that they are among the last to leave in spring. Their haunts in winter are the grassy ponds and river-margins, where they often associate with other ducks. Teal are generally regarded as exceedingly rapid flyers, and yet when seen flying in company with Mallards we have often been struck with the fact that they apparently were unable to outstrip their larger companions. Pearson recalls on one occasion seeing a wounded Green-winged Teal fall, which, on striking the water, instantly dived. After watching a few minutes for its reappearance, he waded out to the point where it had disappeared and found the bird about two feet beneath the surface, clinging with its bill to a water-plant. It was but slightly injured and made no effort to escape when carried ashore. Gentle, beautiful little creatures they are, persecuted wherever found for their choice flesh. C. S. Brimley observes that as a result of draining many ponds in the neighborhood of Raleigh teals of both eastern species are less often seen than formerly. Years ago they were not uncommon during migrations, and were occasionally observed in winter.

Genus Querquedula (Steph.)

48. Querquedula discors (*Linn.*). BLUE-WINGED TEAL.

Ad. ♂.—Crown fuscous, chin and sides of base of bill black; a broad white band across front of head, its hinder margin bordered by black; rest of head and throat dark ashy with purplish reflections; breast and belly cinnamon-rufous, thickly spotted with black; back fuscous, the feathers with crescents of ochraceous-buff; *lesser and median wing-coverts grayish blue*, end half of greater ones white; speculum green. *Ad.* ♀.—Crown fuscous, lightly margined with grayish; sides of the head and the neck whitish, finely spotted with blackish, except on the throat; breast and belly with less cinnamon wash than in the preceding; back and wings quite similar to the preceding, but ochraceous bars sometimes wanting, speculum darker and greater coverts with less white. L., 16.00; W., 7.25; Tar., 1.20; B., 1.60. (Chap., *Birds of E. N. A.*)

Range.—Breeds from the northern half of the United States northward; winters from North Carolina to middle South America.

Range in North Carolina.—Whole State in winter, but most common during the migrations.

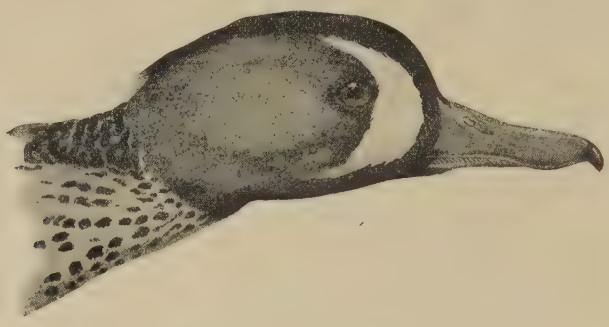


FIG. 40. BLUE-WINGED TEAL (adult male).

Observers usually agree that this species precedes by a few days the Green-winged Teal in the autumn migration. C. S. Brimley records them at Raleigh as early as October 19, and in spring as late as May 6. Cairns saw them at Weaverville April 16 and 23, 1892. Bishop speaks of their being at Pea Island April 27 and again May 1, 1905. Beautiful in plumage, delicious when rightly cooked, and usually abundant in its chosen localities, the Blue-winged Teal is justly popular with sportsmen. The birds are hunted in the rice fields and marshes from boats which are poled slowly by an assistant. The shooting occurs when the birds take wing. They are also much shot at "passes" or points over which they fly when going in the morning or evening to their feeding places. Many are secured from blinds, for these birds come well to decoys. So unsuspicious are they that at times one may easily advance in the open to a point within shooting distance.

Genus Spatula (Boie)

49. Spatula clypeata (*Linn.*). SHOVELLER.

Description.—Male with head and neck green, breast white, belly chestnut, wing-coverts blue. Female much duller, streaky brownish, known by the spoon-shaped bill, and the blue on the wing-coverts. L., 17.00-21.00; W., 9.00-10.00.

Range.—Northern Hemisphere, breeding in America from the northern United States northward, wintering from Maryland to northern South America.

Range in North Carolina.—Coastal region in winter.

The male Shoveller is a striking bird and the green of its head often leads the hasty observer at a distance to believe that he is looking at a Mallard, the similarity also being heightened in part by the large size of the bird. This species is more common in the Mississippi Valley and the West. In North Carolina, however, it appears in limited numbers, usually frequenting fresh or brackish water. We have often seen these ducks in the possession of gunners at Currituck and have bought others at New Bern. A pair was seen in the spring of 1902 at Raleigh by C. S. Brimley. Cairns regarded it as a common spring transient in Buncombe County. While fairly good for food, it is not rated high among ducks.

Fig. 41. Shoveller (adult male).

"I found a flock of about a dozen on Lake Ellis in November, 1909. They were feeding in very shallow water, with mud bottom, and their actions were noticeably different from those of any other ducks with which I am familiar. It was not more than a hundred yards from the rear of my blind to the mudflat on which the birds were feeding, and it was interesting to watch their movements. The noticeable feature of the appearance of these Shovellers was the absence of any erect heads. Every head was down on the water, and every bill submerged. The effect was more that of a lot of muskrats wading in about four inches of water than of feeding ducks. Finally, I left the blind and waded out towards them. Even then not a head was raised until I was almost within range. Then every bill came up at once and the flock took flight. Although shot at several times, and two killed, the survivors returned to the same place no less than seven times during a period of three or four hours."—H. H. Brimley.

Genus Dafila (Steph.)

50. Dafila acuta (*Linn.*). PINTAIL.

Ad. ♂.—Head and throat olive-brown; back of neck blackish, bordered by white stripes, which pass to breast; breast and belly white; the abdomen faintly and sides strongly marked with wavy lines of black and white; back somewhat darker than sides; scapulars black, bordered or streaked with buffy white; wing-coverts brownish gray, greater ones tipped with rufous; speculum green; central tail-feathers glossed with green and much elongated. *Ad.* ♀.—Throat white or whitish, crown and sides of head streaked with blackish and buffy ochraceous, darker above; breast washed with buffy ochraceous and spotted with blackish; belly white; abdomen more or less indistinctly mottled with blackish; sides with bars and lengthened black and white crescents; under wing-coverts *fuscous, bordered with whitish; axillars barred or mottled with black;* back fuscous, the feathers with borders, bars, or crescents of white or buffy; speculum grayish brown bordered with white. *Im.*—The im. ♂ is variously intermediate between the ad. ♂ and ♀; the im. ♀ resembles the ad. ♀, but the underparts are more heavily streaked or spotted. L., ♂, 28.00, ♀, 22.00; W., 10.00; T., ♂, 7.50, ♀, 3.60; B., 2.00.

FIG. 42. PINTAIL (adult male).

Remarks.—The female of this species is a rather obscure-looking bird, but may always be known by its broad, sharply pointed central tail-feathers and dusky under wing-coverts. (Chap., *Birds of E. N. A.*)

Range.—Northern Hemisphere; in North America breeding from northern United States northward, wintering from Delaware to Panama.

Range in North Carolina.—Coastal region in winter.

The Pintail is quite as cosmopolitan in its distribution as the Mallard, but apparently nowhere so abundant. Often the two are found feeding together, but the Pintail is more suspicious and does not decoy so readily. Its summer home is in the northern regions of both continents. Many Pintails winter in suitable places along our seaboard; in fact, in brackish and fresh water they are surpassed in numbers only by the Mallard and Black Duck.

This is a long-tailed, long-necked, neat, slender, and very active duck, being in fact one of the most attractive of our wild fowl. It is built on racing lines and shows speed in every movement, whether on the water or in the air. Every duck-shooter knows, too, that the bird's speed in flight is in keeping with its appearance. Good to look upon, most staisfying to the gunner, and an appetizing dish when on the table, it is a great favorite with discriminating duck-shooters.

Cairns regarded it as a rare transient at Weaverville, Buncombe County.

Genus Aix (Boie)

51. Aix sponsa (*Linn.*). WOOD DUCK: SUMMER DUCK.

Ad. ♂.—A line from bill over eye, a similar line at base of side of crest, and some of elongated crest-feathers white; throat, a band from it up side of head, and a wider one to nape, white; rest of cheeks and crown green with purplish reflections; a white band in front of wings; breast and a spot at either side of the base of the tail purplish chestnut, the former spotted with white; belly white; sides buffy ochraceous, finely barred with black, longer flank feathers tipped with wider bars of black and white; back greenish brown; scapulars blacker; speculum steel-blue; primaries tipped with greenish blue. *Ad.* ♀.—Throat and a stripe from the eye backward white; crown purplish brown; sides of the head ashy brown; breast and sides grayish brown streaked with buffy; belly white; back olive-brown glossed with greenish; inner primaries tipped with greenish blue. *Im.*—The im. ♂ resembles the ♀. L., 18.50; W., 9.00; Tar., 1.35; B., 1.30. (Chap., *Birds of E. N A.*)

Range.—Whole of temperate North America.

Range in North Carolina.—Whole State at all seasons.

"Calloused indeed is the heart of the hunter who can gaze unmoved upon the matchless beauty of a male Wood Duck. For exquisite markings, no duck in the world can surpass the coloring of this living gem of the woodland streams. From early youth the writer has seen much of the ways of the Summer Duck, and whether in flight or in repose on the margin of some quiet pond, its actions have always suggested a gentleness and grace which accord well with the charm of its dress. We can readily believe that the great naturalist, Linnæus, did justice to his feelings when he named it *sponsa*, the bride. Never is the Wood Duck absent from North Carolina. The margins of our sounds, quiet back-waters from the rivers, sequestered ponds and rice-field ditches are its haunts. Here late in the summer flocks may be found, sometimes numbering fifty or more. When startled they often divide into companies of ten or a dozen each, probably separating into family groups, and after circling once or twice pass off through the forest, uttering as they go, low plaintive cries of alarm.

"On May 11, 1898, the writer found a Wood Duck's nest in the hollow of a holly tree in the woods at Cape Hatteras. The entrance to the cavity was about ten feet from the ground and the tree stood in a grove fully six hundred yards from the water. The twelve slightly incubated eggs were almost entirely covered with down plucked from the body of the bird. A remarkable feature about the location of this nest was the fact that the tree stood in a yard near a house, and beneath its branches children, dogs, and pigs disported themselves at pleasure. That their noisy neighbors did not greatly disturb the mother-bird was further shown by the fact that while engaged in examining the nest she alighted on the limb of a neighboring tree, where she stood observing my actions with interest. The same day a second nest

was found in a hollow pine-tree stump twenty feet from the ground. In this instance the entrance to the nest was through the top. In Florida, I once found a nest of this species in a hole excavated by a Flicker, one and one-half miles from the nearest body of water. In the breeding season, when the birds are going to and from their nest, the female always leads, flying usually a few yards in advance of her mate.

"Wood Ducks are choice food, and as a result of their constant persecution are rapidly becoming exterminated in many parts of the State, a fate doubtless being hastened by the draining of ponds and swamps. Their numbers are so reduced that, in my opinion, their killing should be prohibited by law at all times.

"From the time the little ones reach the water until they are able to fly, there are few birds more skilled in making themselves invisible on the approach of danger. Swimming with neck outstretched and head flat on the surface, slipping as quietly as a snake among the lily-pads and water-grasses, or diving, if surprised in the open, a young Wood Duck is not easily seen and is much less easily captured.

"Observers seem to agree that the young are usually taken from the nest to the water in the bill of the parent."—PEARSON.

Genus Marila (Oken)

This genus comprises five species of our sea- or diving-ducks, four of them being among the best known of all our species.

1. Bill not wider toward end than at base; male with head and neck reddish. See 2.
1. Bill wider toward end than at base; male with head and neck black. See 3.
2. Bill much shorter than middle toe without claw. *Redhead.*
2. Bill as long as middle toe without claw. *Canvasback.*
3. Speculum bluish gray. *Ring-necked Duck.*
3. Speculum white. See 4.
4. Flanks white, unmarked; size larger, wing 8.25 or more. *Scaup Duck.*
4. Flanks zigzagged with blackish; smaller; wing 8.25 or less. *Lesser Scaup Duck.*

52. Marila americana (*Eyt.*). REDHEAD.

Ad. ♂.—Head and throat bright rufous; lower neck, breast, back of neck and upper back black; rest of back and scapulars finely barred with wavy black and white lines of *equal width;* wing-coverts brownish gray; upper tail-coverts black; belly white, lower belly more or less finely barred with black; under tail-coverts black; sides *like back.* *Ad.* ♀.—Upperparts dark grayish brown, darker on rump, the feathers more or less margined with buffy or ashy; sides of head lighter; upper throat white; neck buffy ochraceous; breast and sides grayish brown, more or less washed or margined with buffy or buffy ochraceous; belly white; lower belly and under tail-coverts tinged with ochraceous; an indistinct bluish-gray band across end of bill. L., 19.00; W., 8.90; Tar., 1.55; B., 1.85.

Remarks.—This species is frequently confused with the Canvasback, from which it may be distinguished by the characters given under that species.

The female Redhead suggests the female Ring-neck in coloration, but the latter is browner, and they can be also distinguished with certainty by the difference in their size. (Chap., *Birds of E. N. A.*)

Range.—North America, breeds from northern United States northward, winters from Maryland to Mexico.

Range in North Carolina.—Coastal region in winter.

To the market-hunter of the North Carolina coast the Redhead is an exceedingly important bird. Coming, as it does, in immense flocks in the early autumn and remaining usually throughout the winter, the fine quality of the flesh and the oppor-

WOOD DUCK. Aix sponsa (Linn.) Male and Female.

tunities of taking it in large numbers present a field for gunnery eagerly entered by hundreds of coastwise people. They are generally shot over decoys, either from a floating battery or blind. At night they frequently raft in great numbers, and from Core Sound especially come many complaints that gunners illegally shoot them by means of a light shining from the prow of the boat. As many as one hundred and fifty are thus at times slaughtered in one night from a single boat. As yet the State has failed to provide sufficient funds to employ an ample warden force to suppress these violations, and as long as the sale of game is legalized, this tremendous killing will doubtless continue.

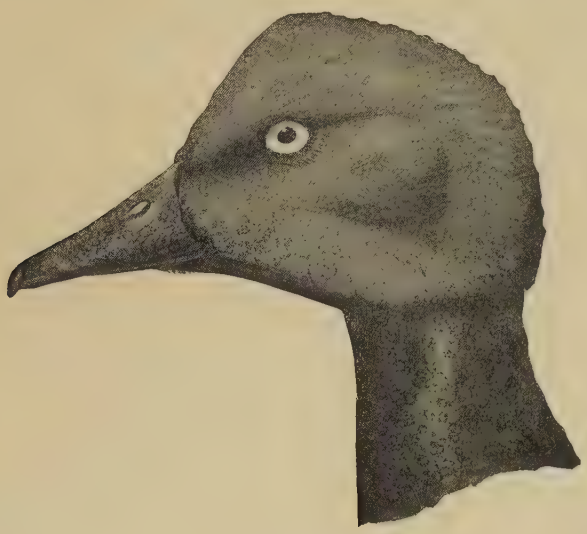


Fig. 43. Redhead (adult male).

Redheads feed largely upon the so-called wild celery of the brackish waters of the coast. This plant is in no sense a celery, but is the *Vallisneria spiralis*, or common eel-grass, which one may often see washed in quantities upon the shores and islands of our inner harbors. To procure their food the ducks must dive, often to a depth of six feet or more.

The Redhead bears a close resemblance to the far-famed Canvasback, from which, however, it is readily distinguished by the shape of the bill, unless, forsooth, they be served together, and then the finest connoisseur will find his past experience of little avail in his attempts at identification.

The Redhead usually retires northward in March.

53. **Marila valisineria** (*Wils.*). Canvasback.

Ad. ♂.—Head and neck rufous-brown, chin and crown generally *blackish;* breast and upper back black; rest of back, and usually *wing-coverts,* finely barred with wavy lines of black and white, *white* lines wider; belly white; lower belly more or less finely barred with black; upper and under tail-coverts black; sides *white, much more lightly* barred with wavy black lines than back, or even entirely without bars. *Ad.* ♀.—Head, neck, upper breast, and upper back cinnamon, throat lighter, and, with front parts of head, more or less washed with rufous; back

grayish brown, feathers more or less barred with *wavy white lines;* belly white or grayish white; sides the same or grayish brown, generally marked like back. L., 21.00; W., 9.00; Tar., 1.60; B., 2.40.

Remarks.—This species is sometimes mistaken for the Redhead, to which it bears a general resemblance. The males of the two species may be distinguished (1) by the color of the head and neck, which is rufous in the Redhead and rufous-brown in the Canvasback; (2) by the generally blackish chin and crown of the Canvasback, these parts in the Redhead being colored like the rest of the head; (3) by the difference in the markings of the back, wing-coverts, and sides; and (4) by the difference in the size and shape of the bill, as shown by the accompanying measurements. The females of the two species may be at once distinguished by the color of the back, which in the Canvasback is finely barred with wavy white lines, markings which do not appear on the back of the female Redhead. (Chap., *Birds of E. N. A.*)

Range.—North America; breeds from northern United States northward, winters from Pennsylvania to Mexico.

Range in North Carolina.—Coastal region, mainly confined to Currituck Sound and vicinity.

FIG. 44. CANVASBACK (adult male).

Few wild birds on the American market today command as high prices as the Canvasback, and for long years to come it will probably be regarded as the standard of comparison when discussions arise as to the relative merits of palatable ducks. Of their autumn flight, Sanford in *The Water Fowl Family* says: "The migration from the North is over the water-courses of the interior, until near the boundaries of the United States; there some strike the Pacific shore, and a large body pass over the prairies to Texas and Mexico, wintering on the larger inland bodies of water and along both coasts to Central America. Another smaller flight is over the Great Lakes to the Chesapeake and south. This is the course of those birds wintering on the Atlantic coast."

Canvasbacks are shot almost entirely over decoys. In the sounds of North Carolina the market-gunners usually shoot from batteries, and cold, windy days are

regarded by many gunners as the best for securing a large bag. A driving mist or a thin snow render the possibilities of the hunter even greater. These birds fly with surprising rapidity. While shooting from a blind in Pamlico Sound we invariably missed the few straggling Canvasbacks that passed. It was only when we learned to fire at a point ten or twelve feet ahead of the flying birds that success crowned our efforts. When but slightly wounded this bird will dive with great alacrity and, swimming for many rods beneath the surface, will rise an instant for breath and again disappear before the gunner can fire.

There is much evidence that this splendid game-bird is perceptibly decreasing, the occasional reported increase in various localities being easily accounted for by the change in flight for the season.

54. Marila marila (*Linn.*). Scaup Duck: Big Blackhead.

Description.—Head, neck, and breast black in male; no ring round neck; back and scapulars grayish white irregularly zigzagged with black; head with greenish gloss. Female duller, the head and neck brown, with white around the base of bill, upperparts mainly brown. L., 18.00-20.00; W., 8.25-9.00.

Range.—Northern part of Northern Hemisphere, breeding mainly north of the United States, wintering from Maine to Florida.

Range in North Carolina.—Coastal region in winter, but mainly in Pamlico Sound.

The Big Blackhead is much more of a "raft" duck than the Little Blackhead, approaching more nearly the Redhead in its habits and range. It is found chiefly on the salt-water and brackish sounds. Here it often congregates in companies of many thousands, and does not, at such times, decoy with the frequency and absence of caution that are so characteristic of the Lesser Scaup.

W. M. Webb of Morehead City, who, in his capacity of State Oyster Commissioner, probably travels the waters of Core and Pamlico sounds to a greater extent than any other person during the ducking season, and who is besides an ardent and observing sportsman, writes as follows: "The number of Big Blackheads outnumber the Little Blackheads three to one on Pamlico and Core sounds. I should say that there are more Little Blackheads killed for the reason that they travel singly, in pairs, or small bunches, and decoy better than any duck we have. On the other hand, the Big Blackheads travel in large numbers and are as wary as Redheads. There have been more of the Big Blackheads and Redheads during the past two seasons than at any time during the last ten years."—(Extract from letter dated August 17, 1911.)

C. S. Brinson, a lifelong resident on Currituck Sound, and a large game-dealer, states in a letter dated September 1, 1911, that the Little Blackhead is the most plentiful of all ducks on Currituck, but that the Big Blackhead—"Broadbill," as he calls it—is equally plentiful on the lower salt-water sounds. From 1914 to 1918, bags of Blackheads taken on New River, in Onslow County, have at times contained a good percentage of the larger species. Ordinarily, the Lesser Scaup is the common duck on these waters, but when ducks in general are comparatively scarce, it sometimes occurs that the Big Blackheads taken outnumber the smaller species. I have weighed several pairs of these birds that ran over 4¾ pounds to the pair, one pair weighed reaching five pounds even. H. H. Brimley.

These evidences of the abundance of the Big Blackhead in North Carolina waters are introduced as a rebuttal of the statement made by former writers that Chesapeake Bay forms the southern limit of this bird's winter range, and further, that in North Carolina its place is taken by the Little Blackhead. The probable reason for this mistake is that most of the published duck-lore of the State has come from observers on Currituck Sound and vicinity, where the small species is the one most in evidence.

Both the Blackheads are "good" ducks when feeding on aquatic vegetable growths, but the flesh becomes strong and fishy when they take to an exclusive diet of small mussels, as they do in localities where the vegetable food is absent. And hundreds of thousands spend the winter on waters where the latter conditions prevail.

FIG. 45. SCAUP: BIG BLACKHEAD (adult male).

Every salt-water duck-shooter from Core Sound to the Long Island waters knows the Big Blackhead, or Broadbill, and better duck-shooting cannot be had than that furnished by these birds when the weather is right for breaking the large rafts into bunches small enough to be attracted to the shooter's decoys.

55. Marila affinis (*Eyt.*). LESSER SCAUP DUCK.

Ad. ♂.—Similar to preceding species but smaller, head, as a rule, glossed with purplish instead of greenish, and flanks strongly instead of faintly marked with wavy black bars. *Ad.* ♀.—Similar to ♀ of the preceding species, but smaller. ♂ L., 16.50; W., 8.00; Tar., 1.35; B., 1.60; greatest width of B., .95. ♀ L., 16.50; W., 7.60; Tar., 1.30; B., 1.55; greatest width of B., .90.

Remarks.—The Scaup Ducks resemble each other so closely that it is sometimes impossible to tell them apart, but they may generally be distinguished by the characters given above. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding from northern United States northward, wintering from New Jersey to Panama.
Range in North Carolina.—Coastal region in winter; occasionally inland.

This is the common "Blackhead" or "Bluebill" of our fresh-water sounds, estuaries, and coastwise creeks, and is well known to the sportsmen and market-gunners of most of the Carolina coast-country. It also frequents in limited numbers the fresh-water lakes and rivers of the interior. H. H. Brimley reports it as a regular, though never common, winter visitor on Lake Ellis, and specimens were taken by him at Raleigh, March 10, 1891, and again January 2, 1895. Cairns regarded it as a transient in Buncombe County.

This is by far the most abundant species in winter on the Florida waters, and quickly learns a territory wherein protection is afforded it. Thus at Palm Beach, situated in Lake Worth, where the Audubon law has made it illegal to kill these birds, Pearson in 1909 found them so tame that by throwing fragments of shell into the water the birds were easily persuaded to swim in close to the sea-wall in quest of the supposed food. On such occasions they did not hesitate to approach within ten or fifteen feet. Similar treatment would make them just as tame in North Carolina.

The Little Scaup comes well to decoys, and many are thus killed. By scattering grain in the water at a place where they have been observed to come and feed, they can soon be induced to acquire such a preference for the locality that the flocks will return again and again after being fired upon. They are birds that possess a strong curiosity and, in some places, like the antelope, it is said they are tolled to their destruction by simply displaying a small red flag and judiciously waving it to attract their attention.

On our coastal waters probably more Little Blackheads are killed over decoys than all other species combined. In the early part of the season vast numbers are slaughtered on the lower reaches of Currituck Sound, and in November of 1909 we know of one pair of market-gunners shooting four hundred in a single day, by an expenditure of about eleven hundred shot-cartridges. Not very shy, drawing to almost any kind of a decoy, and rather unsuspicious, this little duck is the joy of the shooter from a battery or blind who is killing them for market.

Bearing on the possible breeding of the Little Blackhead in this State, the following notes are of interest:

In May, 1909, a party was bass-fishing in South River, Carteret County. While casting along the edge of the marsh a bird was seen to slide into the water just ahead of the boat. It instantly dived, and was killed with a paddle as it rose. It proved to be a female Lesser Scaup, with the breast worn so bare as to indicate an incubating bird. (Reported by Mr. William Dunn of New Bern.)

A pair of this species was seen on Lake Ellis in June, 1906, by H. H. Brimley.

Bruner and Feild observed a pair on Lake Kawana, in Avery County, in late June, 1911.

In *Forest and Stream* for August 6, 1910, page 211, Jasper White of Waterlily, N. C., writes: "On July 13, 1910, a flock of seven young Blackheads—small sized Scaup—was seen. They were very tame and allowed me to get within twenty yards

of them. We often see young Black Ducks, Wood Ducks, and sometimes Mallards, but I never saw or heard of young Blackheads at Currituck before. There is a flock of two hundred or two hundred and fifty Scaup now on the beach ponds of the Swan Island Club, and I have no doubt many of them are young birds."

56. Marila collaris (*Donov.*). RING-NECKED DUCK.

Ad. ♂.—Chin *white;* head, neck, breast and upper back black, head with bluish reflections, neck with a not sharply defined *chestnut collar;* back and scapulars *black,* speculum *gray;* upper and under tail-coverts black, belly white, lower belly and sides finely barred with wavy black lines; bill black, base and a band across end *bluish gray.* *Ad.* ♀.—Upperparts fuscous-brown, more or less margined with ochraceous; speculum *gray;* sides of head and neck mixed grayish brown and white; breast, sides and lower belly grayish brown, more or less margined with ochraceous; upper belly white or whitish; bill blackish, an indistinct band of bluish gray across its end. L., 16.50; W., 7.50; Tar., 1.25; B., 1.80.

Remarks.—The male Ring-neck may be known from any of its allies by its chestnut collar and other excellent characters; the female resembles the female Redhead, but is smaller and generally browner. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding from the northwestern States northward, winters from New Jersey to Central America.

Range in North Carolina.—Coastal region in winter; rare.

FIG. 46. RING-NECKED DUCK (adult male).

As this is usually mistaken for the Little Blackhead by gunners, its comparative abundance is difficult to ascertain. At a little distance the two are indistinguishable. Only a few specimens have been recorded in North Carolina. Cairns speaks of it as a rare transient in Buncombe County, and there are two in the State Museum which were taken on the coast. Its summer home is far to the north, and it is one of the few ducks which are said to use no feathers in their nests.

Brinson, who is quoted in regard to the Broadbill, states that possibly one per cent of the "Blackheads" killed in eastern North Carolina are Ring-necks. He thus regards it as comparatively rare.

On November 1, 1911, two females of this species were found among the fowl killed that day on Lake Ellis. They were identified by H. H. Brimley, after having been passed over by the other gunners as Little Blackheads. There is little doubt that this bird is much more frequently killed in North Carolina than is generally supposed.

The *black* bill, with lead-colored cross bar, will always distinguish it when freshly killed from the Lesser Scaup, with its *lead-colored* bill and black tail. The gray speculum of the Ring-necked Duck, as opposed to the white of the Blackhead, is another point of distinction.

Genus Clangula (Oken)

KEY TO SPECIES

This genus is represented in North America by two species, both of which have been attributed to our State, one probably erroneously.

1. Male with a round or oval spot of white on lower part of lores; female with brown of neck reaching only to upper part of neck, and not as far in front as elsewhere. *Golden-eye.*
1. Male with a large vertical wedge-shaped patch of white across lores; female with brown of neck descending to middle of neck all around. *Barrow's Golden-eye.*

Fig. 47. Golden-eye (adult male).

57. Clangula clangula americana (*Bonap.*). Golden-eye.

Ad. ♂.—Head and throat dark, glossy *green*, a circular white patch at base of bill measuring, along bill, less than *half an inch* in height; neck all around, breast, belly, exposed part of wing-coverts, speculum, and most of the scapulars white; rest of plumage black. *Ad.* ♀.—Head and throat cinnamon-brown, foreneck white; upper breast, back, and sides ashy gray bordered with grayish; wing-coverts tipped with white; speculum, lower breast and belly white. L., 20.00; W., 9.00; B. from anterior margin of white patch to anterior margin of nostril, 1.00; from anterior margin of nostril to tip, .75. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding mainly north of the United States, wintering from Maine to Mexico.

Range in North Carolina.—Coastal region; also occasional in the interior.

The Golden-eye or Whistler is of wide distribution, being found at some time of the year throughout the greater part of North America. Difficult at all times to kill, it knows well the hunting methods of the Eskimo of the North and the peon of the South. As a diver it is an expert, and often disappears at the flash of the gun. Writing of the nesting habits of the Golden-eye, Mr. William Brewster in *The Auk* for July, 1900, says: "All the Whistlers' nests which I have examined have been placed over water at heights varying from six or eight to fifty or sixty feet, and in cavities in the trunks of large hardwood trees such as elms, maples, and yellow or canoe birches. As the supply of such cavities is limited even where dead or decaying trees abound, and as the birds have no means of enlarging or otherwise improving them, they are not fastidious in their choice, but readily make use of any opening which can be made to serve their purpose. Thus it happens that the nest is sometimes placed at the bottom of a hollow trunk, six, ten, or even fifteen feet below the hole at which the bird enters, and at others on a level with and scarce a foot back from the entrance." The introduction of pickerel in many northern streams and lakes is responsible for the destruction of numerous young, a plump, juicy young duck affording an appetizing mouthful for this ever-hungry fish.

The Golden-eyes frequent our sounds and estuaries apparently in limited numbers, feeding upon shellfish, crustacea, and various water plants. They keep well to themselves as a rule, and never "raft" in large numbers.

FIG. 48. BARROW'S GOLDEN-EYE (adult male).

Coues found them not uncommon near Fort Macon in 1869 and 1870. Cairns records them as rare in Buncombe County. Several skins from the coast region are in the State Museum. Pearson discovered a dead specimen on Pea Island, December 30, 1902. H. H. Brimley collected an immature male, and saw another on White Lake in Bladen County, January 3, 1912.

58. Clangula islandica (*Gmel.*). BARROW'S GOLDEN-EYE.

Description.—Male with head and upper neck glossy purplish black, with a large vertical crescent-shaped patch of white across lores; a black band crossing white wing patch; female very similar to Golden-eye, distinguished by the character given in the key, and by the bill being comparatively shorter and having a broader nail, these last distinctions applying to both sexes. Size about same as the preceding species.

Range.—Northern North America, breeding from Iceland to Quebec and Colorado, wintering from the St. Lawrence to California and New England.

Range in North Carolina.—Has been attributed to Buncombe and Craven counties, in the latter case apparently erroneously.

This bird is more northern and western in its distribution than the preceding species. In habits and general appearance the two are very similar. Four have been recorded from North Carolina, but the identifications were incorrect in three of these cases. The two specimens in the State Museum mentioned by Smithwick (Catalogue of N. C. Birds) are really adult male *americana*. The specimen taken by Cairns in February, 1893 (see C. S. Brimley, *The Auk*, July, 1893, pp. 241-2), is in the collection of William Brewster, who informs us that it is a male *americana* assuming the adult plumage. The specimen in the State Museum mentioned by C. S. Brimley (*loco citato*) is one of the two mentioned by Smithwick, and is *americana*.

The one record, therefore, is that of a male which Cairns reported that he took in Buncombe County on May 6, 1893. This specimen has not been located

FIG. 49. BUFFLEHEAD (adult male).

Genus Charitonetta (Stejn.)

59. Charitonetta albeola (*Linn.*). BUFFLEHEAD.

Description.—Male black and white, the head very puffy and beautifully iridescent black, with no white in front of eye, but a large white patch back of eye. Lower neck, underparts, wing-coverts, secondaries and outer scapulars, white; rest of upperparts black. Female duller, with the black replaced by grayish brown. L., 12.25-15.25; W., 6.00-7.00.

Range.—North America, breeding mainly north of the United States, wintering from New Brunswick to Florida and Mexico.

Range in North Carolina.—Coastal region in winter, occasionally inland.

This is a common duck on the sounds and estuaries, usually seen in pairs or in small flocks. The male is beautiful and quick-moving, always more or less in evidence to the gunners spending a day in a blind out on the sounds. It does not decoy readily and its small size and rapid movements make it a difficult target. It is a marvelous diver and, to some extent, feeds upon small shell-fish.

A female was taken at Raleigh, December 16, 1893, and it is recorded by Cairns as a rare transient in Buncombe County.

Genus Harelda (Steph.)

60. Harelda hyemalis (*Linn.*). OLD-SQUAW.

Ad. ♂ in winter.—Sides of front of head washed with grayish brown; sides of back of head and sides of upper neck black, more or less margined with ochraceous; rest of head, neck all around, upper back, scapulars, and lower belly white; back, breast, and upper belly black; tail pointed, middle feathers very long and narrow; band across end of bill yellowish orange. *Ad.* ♂ *in summer.*—Sides of the front of head white; rest of head, neck, throat, breast and upper belly black; back and scapulars black, the latter margined with dark buffy ochraceous; lower belly white; tail and bill as in preceding. ♀ *in winter.*—Upperparts black or fuscous; scapulars and upper back more or less margined with grayish or grayish brown; sides of head and neck and sometimes back of neck white or whitish; breast grayish; belly white; tail pointed, but without long feathers of male; under wing-coverts dark. *Ad.* ♀ *in summer.*—Generally similar to above, but sides of head and throat mostly blackish, and feathers of upperparts more or less margined with ochraceous. L., ♂, 21.00. ♀, 16.00; W., 8.60; T., ♂, 8.00, ♀, 2.50; B., 1.05.

FIG. 50. OLD-SQUAW (adult male).

Remarks.—The male Old-squaw is too distinct to be confused with any other species, its long tail-feathers being its most striking character; the female bears some resemblance to the female of the Harlequin Duck, but has the belly pure white instead of grayish dusky. (Chap., *Birds of E. N. A.*)

Range.—Northern Hemisphere, breeding in the far North, wintering from Gulf of St. Lawrence to North Carolina.

Range in North Carolina.—Coastal region in winter, not common; occasional inland.

As beautiful in looks as it is undesirable in taste. Dwight W. Huntington in *Our Feathered Game* says: "It is a swift flyer, expert diver, a fish-eater, and a tough and undesirable bird for the table. Its evolutions in the air are said to be

beautiful in the springtime, when the males chase the females about and all dive from the air into the water." The Old-squaw is a common winter resident in our open sounds and bays. About Cape Hatteras it is known as the "Knock Molly."

"Late on the evening of an exceedingly cold day in December, 1902, the writer entered Kitty Hawk Bay aboard a small sailing vessel. Scattered about the bay were noticed perhaps fifteen Old-squaw Ducks. They exhibited little disposition to fly and two specimens were shot from the boat. One of these was only wing-tipped. The boat was jibed and a short pursuit followed. The bird swam rapidly ahead, glancing frequently over its back, but did not attempt to dive."—PEARSON.

Wounded ducks of many species are to be found in North Carolina waters in the spring after the northward flight has passed. At New Inlet, on May 13, 1898, Pearson secured such a bird, an Old-squaw in perfect summer plumage. The specimen is now in the State Museum.

This species may be regarded as very rare inland. Cairns took a male in Buncombe County in 1897. One was killed in Wake County in the winter of 1909–10 and brought in the flesh to C. S. Brimley.

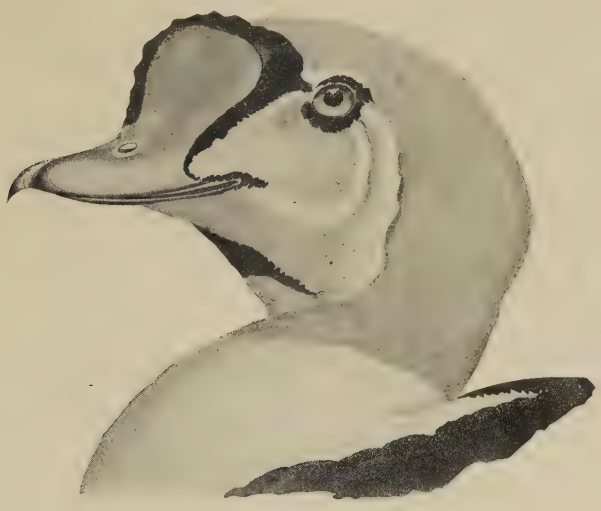


FIG. 51. KING EIDER (adult male).

Genus Somateria (Leach)

61. Somateria spectabilis (*Linn.*). KING EIDER.

Ad. ♂.—Region about base of upper mandible and a large *V-shaped* mark on throat black; top of head bluish gray; cheeks greenish; neck all around white; front and sides of breast creamy buff; upper back, sides of rump, and wing-coverts white; rest of plumage black. *Ad.* ♀.—Head and throat buffy ochraceous, the former streaked with black; back black, the feathers widely margined with ochraceous or rufous; underparts varying from brownish gray to fuscous, more or less washed, especially on breast, with ochraceous or rufous. *Im.*—Paler and with less ochraceous. L., 23.00; W., 10.80; Tar., 1.80; B., 1.30.

Remarks.—The adult male of this species may at once be known by its bluish gray head and the V-shaped mark on its throat. Females and young birds resemble those of the two other species of eider, but are to be distinguished by the generally unstreaked throat and the feathering of the side of the base of the bill, which in this species does not, as in the two previously mentioned, reach to the nostril. (Chap., *Birds of E. N. A.*)

Range.—Northern portion of Northern Hemisphere, coastwise, in winter regularly to Long Island, casually to Georgia.
Range in North Carolina.—Occasional along coast.

Eiders belong essentially to arctic seas. In winter they appear in limited numbers in the ocean off the coast of the United States, regularly as far south as New York. Their food consists largely of shellfish of many varieties; hence their flesh is but little sought for the table.

It appears that they come but seldom to our coast. Cooke, in his publication, "Distribution of North American Ducks, Geese, and Swans," states that in the year 1897 King Eiders were taken in Virginia and South Carolina. Again in 1890 and 1904 they most probably visited North Carolina, for he records their occurrence those years on the Georgia coast. In December, 1908, a flight reached our shores. Four were killed at Oregon Inlet, in Dare County, on December 3. Two of these were later presented to John E. Thayer of Lancaster, Massachusetts, and are now in his collection. On the 16th of the same month an immature female was shot at Pea Island, Dare County, by J. R. Roberson, and presented to Bishop, who was on the island at the time. Bishop writes that others were locally reported to have been taken in the region at a slightly earlier date.

The Eider, *Somateria dresseri* Sharpe, has been known to come as far south as Virginia, and hence is not unlikely to occur on our coast. In this species there is no V-shaped black mark on the throat in the male, while the top of head is mainly black, and the scapulars and tertials are white. In the female the feathering on the top of the bill does not extend more than halfway to the nostril, and that on the lores reaches forward to below the hind end of the nostril. Size same as King Eider.

Genus Oidemia (Flem.)

KEY TO SPECIES

1. Wing with a white patch in both sexes. *White-winged Scoter.*
1. Wing without white patch. See 2.
2. Nostrils in middle of bill. No white. *Scoter.*
2. Nostrils beyond middle of bill. Head with some white. *Surf Scoter.*

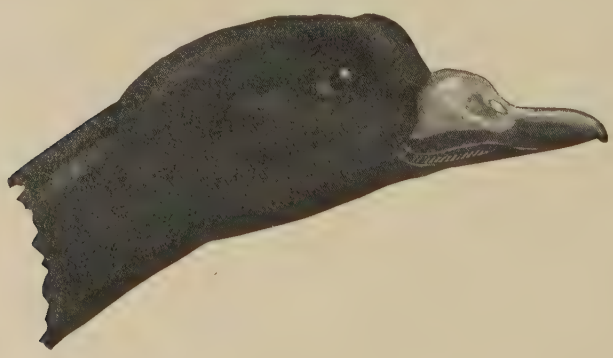


FIG. 52. SCOTER (adult male).

62. Oidemia americana (*Swains.*). SCOTER.

Ad. ♂.—Entire plumage black, feathers on side of bill extending little if any forward beyond corner of mouth; bill black; upper mandible orange or yellowish at the base. *Ad.* ♀ *and Im.*—Above chest and sides grayish brown; cheeks whitish, sharply defined from crown;

belly whitish faintly barred with dusky. L., 19.00; W., 9.00; Tar., 1.70; B. along culmen, 1.75; B. along side, 1.85. (Chap., *Birds of E. N. A.*)

Range.—North America and eastern Asia, breeding in northeastern Asia, and extreme northern America; winters as far south as North Carolina.

Range in North Carolina.—Coastal region in winter.

The Scoter is a common winter species in Pamlico and Core sounds, but is more numerous, perhaps, on the ocean, especially in favorable weather. "Sea Coot" is the common local name for this and the two following species. All three of the Scoters occur regularly during the winter on New River, in Onslow County. They all come in readily to Blackhead decoys.

63. Oidemia deglandi (*Bonap.*). WHITE-WINGED SCOTER.

Ad. ♂.—A spot below eye and *speculum white*, rest of plumage black; bill orange, black at base, the feathers on it reaching *forward far beyond corners of mouth. Ad.* ♀ *and Im.*♂.—Grayish or fuscous-brown, lighter below; *speculum white*, feathers at base of upper bill and a spot on the ears whitish. L., 22.00; W., 11.00; Tar., 2.00; B. along culmen, 1.50; B. along side, 1.55.

Remarks.—The white speculum and feathering of the bill will always serve to distinguish this species from its allies. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding mainly north of the United States, wintering from Gulf of St. Lawrence to North Carolina or farther south.

Range in North Carolina.—Coastal region in winter.

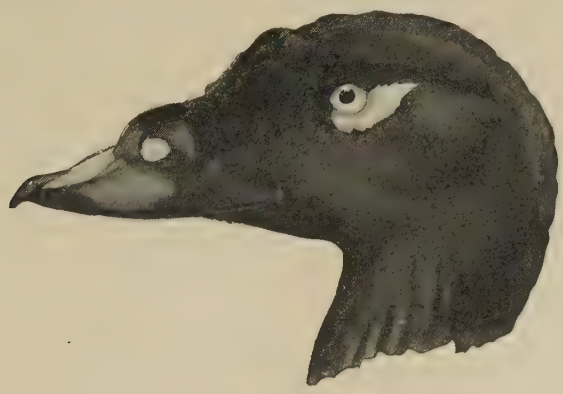


FIG. 53. WHITE-WINGED SCOTER (adult male).

This bird is often seen associated with the two other scoters; in fact, the habits of the three are very similar. None of the scoters are much shot in North Carolina waters. New England sportsmen hunt them persistently, probably for the lack of better fowl, as the Scoters are among the most numerous of all sea-fowl on those bleak shores. Usually they are shot from boats, a long line of which are anchored off shore at right angles to the coast in a territory much frequented by the birds in flight. In winter they occur regularly in large numbers on Pamlico Sound.

64. Oidemia perspicillata (*Linn.*). SURF SCOTER.

Ad. ♂.—A square mark on crown and a triangular one on nape white, rest of plumage black; bill with white, red and yellow, a black spot on its side at base; feathers on culmen extending nearly to a level with nostril, feathers on *side* of bill *not* extending forward. *Ad.* ♀ *and Im.*—A whitish spot at base of the bill and on ears; upperparts fuscous-brown; throat, breast, sides and lower belly grayer, belly white. L., 20.00; W., 9.30; Tar., 1.60; B. along culmen, 1.55; B. along side, 2.30.

Remarks.—The forward extension of the feathers on the *culmen* will always distinguish this species from *O. americana*, while it may be known from *deglandi* by the absence of white in the wings. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding far northward; winters from Nova Scotia to North Carolina.

Range in North Carolina.—Coastal region in winter.

FIG. 54. SURF SCOTER (adult male).

In writing of Surf Scoters on the New England coast, George H. Mackey in *The Auk* for July, 1891, says, "they feed on black mussels (*Modiola modiolus*), small sea-clams (*Spisula solidissima*), scallops (*Pecten concentricus*), and short razor-shells (*Siliqua costata*), about an inch to an inch and a half long, which they obtain by diving. Mussels measuring two and a half inches by one inch have been taken from them; but usually they select sea clams and scallops, varying in size from a five-cent nickel piece to a quarter of a dollar. They can feed in about forty feet of water, but prefer less than half that depth." Bishop records Surf Scoters in large numbers at Pea Island in 1901 as late as May 15.

This bird is sometimes known as "Skunk Head," the name being evidently derived from the sharply contrasted black and white markings.

Genus Erismatura (Bonap.)

65. Erismatura jamaicensis (*Gmel.*). RUDDY DUCK.

Ad. ♂.—Top of head black, cheeks and chin white, throat and back rufous-chestnut, lower back blackish; breast and belly silvery white; upper tail-coverts *very* short, tail-feathers *stiff and pointed;* bill blue. *Ad.* ♀ *and Im.*—Upperparts dark grayish brown, the feathers marked with fine wavy bars of buffy; sides of head and upper throat whitish, lower throat grayish, rest of underparts silvery white. L., 15.00; W., 5.90; Tar., 1.15; B., 1.55.

Remarks.—The short upper tail-coverts and stiff, pointed tail-feathers will always serve to identify this species. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding mainly northerly, but locally and rarely as far south even as the West Indies; winters from Maine to Central America.

Range in North Carolina.—Coastal region in winter.

This is one of the smallest as well as the most trustful and unsuspicious of our ducks. It does not decoy readily though it appears to have little fear of the gunner. It is a strong diver, but when alarmed prefers, if given a fair chance, to escape by flight. This it accomplishes by taking wing slowly along the surface of the water with head directly to the wind. It has not been many years since the market-hunter began to shoot these plump little birds, which formerly swam or flew about him unnoticed. The high prices they command of late have drawn to them the aim of gunners throughout their range, and as a natural result the "Boobies" show a marked decrease in number. A popular method of killing is to "ring shoot" them from a number of boats which have surrounded a feeding flock.

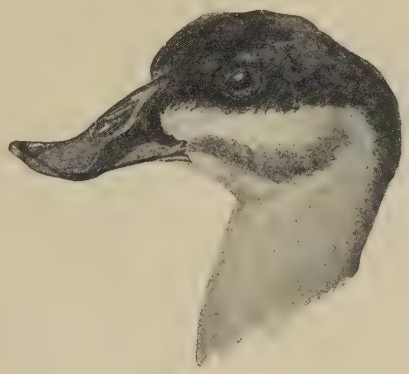


Fig. 55. Ruddy Duck (adult male).

Twenty years ago this duck was very common on Currituck Sound and in the waters around New Bern. At that time, in Currituck, all ducks other than Canvas-back and Redhead were classed as "common ducks," and brought about thirty cents a pair to the market-gunners. In counting the smaller species—among which was the Ruddy Duck—four specimens were required to make a "pair."

A peculiarity of this duck in those days was its disinclination to cross land in trying to escape the gunner. A bunch that could be worked up a creek, or into a narrow bay, by a careful maneuvering of the boat, would thus afford good shooting when the birds finally attempted to escape back to the open water.

SUBFAMILY ANSERINÆ (GEESE)

Genus Chen (Boie)

KEY TO SPECIES

1. Plumage chiefly grayish brown, the rump and wing-coverts bluish gray. *Blue Goose.*
1. Plumage of adult chiefly white, the young grayish white. See 2.
2. L., 23.00 to 28.00; W., 14.50 to 17.00. *Snow Goose.*
2. L., 30.00 to 38.00; W., 17.35 to 17.50. *Greater Snow Goose.*

66. Chen hyperboreus hyperboreus (*Pall.*). Snow Goose.

Description.—Entire plumage, except primaries with their coverts, white; primaries black, their bases and coverts ashy. *Im.*—"Head, neck and upper parts pale grayish, the feathers of the latter with whitish edges and (especially wing-coverts and tertials) striped medially with

darker; rump, upper tail-coverts, tail and lower parts plain white. L., 23.00-28.00; W., 14.50-17.00; B., 1.95-2.30; Tar., 2.80-3.25" (Ridgw.). (Chap., *Birds of E. N. A.*)

Range.—North America, breeding far northerly, in winter restricted mainly to the more western States; rare in the east.

Range in North Carolina.—Accidental on the coast.

Here we have a western bird, more commonly known in California and on the marshes of the Louisiana coast which it frequents in winter. Apparently it is quite rare on the Atlantic coast, and we know of its appearing in North Carolina upon one occasion only. Bishop writes that he examined in the flesh a female taken by Dr. C. C. Bush at Pea Island, February 5, 1906.

67. Chen hyperboreus nivalis (*Forst.*). GREATER SNOW GOOSE.

Description.—Similar to the preceding in color, but larger. L., 35.00; W., 17.50; B., 2.60.

Range.—Eastern North America, breeding far northerly, in winter from Chesapeake Bay to West Indies.

Range in North Carolina.—Portions of coastal region in winter.

FIG. 56. GREATER SNOW GOOSE.

The "White Brant," as the Greater Snow Goose is almost universally known to gunners, is a rare bird along the southern half of the North Carolina coast. On January 1, 1903, Pearson saw one standing among the sand dunes at Cape Hatteras. It showed no disposition to fly until his horse and cart approached within fifty yards. Then it sprang into the air, and heading up wind flew rapidly for

several hundred yards, the black wing-tips contrasting strongly with the pure white plumage. It was followed for an hour or more, and in the course of its various flights completely circled the lighthouse.

A bunch of Snow Geese frequented the waters of Core Sound in the winter of 1892–3. A pair from this flock was sent to the State Museum in the flesh from Beaufort. Two specimens were taken on Trent River, near New Bern, in 1884.

A flock every winter inhabits the beaches between Currituck Sound and the ocean. Writing of this fact in *American Duck Shooting*, Grinnell says: "These birds do not seem to associate with the common gray geese, but keep to themselves, and feed largely on the marsh instead of in the water. Sometimes I have sailed within gunshot of this flock of 500, and their white heads appearing over the short marsh grass, which hides their bodies, have a very curious appearance. When fairly alarmed, they spring into the air and fly away with sharp, cackling cries, much less musical than those of the common Canada Geese."

The White Brant's flesh is not very palatable, and the birds are seldom, if ever, hunted in this State.

A peculiarity of this bird is the reddish-brown stain often in evidence on the head and neck.

68. Chen cærulescens (*Linn.*). Blue Goose.

Ads.—Head and upper neck white; middle of hindneck sometimes blackish, lower neck all around fuscous, rest of underparts brownish gray edged with buffy; lower belly generally paler, sometimes white; upper back and scapulars like breast; lower back, rump and upper tail-coverts gray; tail fuscous gray edged with whitish; wing-coverts like the rump or slightly darker, with little or no whitish margins; wing-quills and tertials fuscous, the latter more or less margined with whitish. *Im.*—"Similar to adult, but head and neck uniform deep grayish brown, only the chin being white. L., 26.50-30.00; W., 15.00-17.00; B., 2.10-2.30; Tar., 3.00-3.30" (Ridgw.). (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, in winter mainly in Mississippi Valley, rare on Atlantic coast.

Range in North Carolina.—Once recorded from Beaufort.

This is another western bird, which occurs but rarely on the Atlantic coast. Atkinson states that he examined a live specimen in the possession of S. J. Moore of Beaufort, which had been captured on Bogue Beach, one mile from Fort Macon, by James Willis of Morehead City in the spring of 1884. (Proceedings Elisha Mitchell Scientific Society, 1887, p. 56.)

Genus Anser (Briss.)

69. Anser albifrons gambeli (*Hartl.*). White-fronted Goose.

Description.—Grayish brown, the forepart of the head in adult white, lower parts grayish white, blotched or spotted with black; anal region, crissum, and tail-coverts white; young similar, but no white on head nor black on underparts. L., 27.00-30.00; W., 14.50-17.50.

Range.—Central and western North America, breeding far northerly, winters mainly in the Mississippi Valley, rare on the Atlantic coast.

Range in North Carolina.—Once recorded from Currituck.

Seldom has this goose been recorded on the Atlantic seaboard. The one positive record of its appearing in North Carolina is based on the reception at the State Museum of a specimen taken in Currituck Sound during January, 1897. It was sent by Captain T. J. Poyner.

FIG. 57. WHITE-FRONTED GOOSE (adult).

Genus Branta (Scop.)

KEY TO SPECIES

Comprises geese with the bill and feet black, and with at least some part of the head black.

1. Head entirely black. *Brant.*
1. Head with some white. See 2.
2. Head mainly black, with a triangular patch of white on each cheek, these joining under throat. *Canada Goose.*
2. Head mainly white, the lores, occiput, neck, and chest black. *Barnacle Goose.*

70. Branta canadensis canadensis (*Linn.*). CANADA GOOSE.

Ads.—Throat and a large patch on side of head behind eye white or whitish; chin and rest of head and neck black; back and wings grayish brown, more or less edged with lighter; tail and shorter upper tail-coverts black, longer and lateral ones white; breast and belly grayish, fading to white on lower belly; sides like back. *Im.* –Similar, but throat and cheeks sometimes mixed with blackish. "L., 35.00-43.00; W., 15.60-21.00; Tar., 2.45-3.70; B., 1.55-2.70" (Ridgw.). (Chap., *Birds of E. N. A.*)

Range.—Temperate North America, breeding from the northern States northward to the tree limit.

Range in North Carolina.—Mainly coastal region in winter. In the migrations likely to occur anywhere in the State.

In the days of early autumn comes to one's ears the deep trumpet-call of an old gander, and looking up one may see a V-shaped flock of wild geese passing over, their backs seeming to scrape the very sky. Few sights in nature so stir the imagination of mankind! Somewhere far to the north, perhaps on the tundras within the shadow of the frozen pole, these birds have passed the summer, and now upon the approach of winter something calls them on their long journey, to be ended only in the sounds of Carolina or maybe the lagoons of the Gulf Coast.

About their summer homes many of them have been harassed by the Eskimo and Indian, who pursued them with dogs when they were unable to fly during the molt-

CANADA GOOSE. Branta canadensis canadensis (Linn.)

ing season. In the stubble-fields of the West, gunners have lurked for them in pits near which were skillfully placed metallic profile-decoys. Soon in the eastern waters of North Carolina market-gunners and sportsmen will be taking their yearly toll of the flocks.

Yet, despite the constant persecution to which these geese are subjected, they retain their numbers most remarkably. In favorable weather it is not an uncommon sight to see ten thousand during one day's sail through Pamlico or Currituck Sound.

Canada Geese are easily domesticated and often live to a ripe old age. In 1902 a gander was shown to Pearson owned by a man at Poplar Branch, Currituck County, which was generally reported in the neighborhood to be sixty-one years of age. Domesticated birds do not mate readily, and the man who owns a flock of thirty or forty birds may be well satisfied if eight or ten pairs of his geese are mated. These domesticated birds are much used as decoys, and indeed the hunter has need of all available aids to secure the wary Wild Goose. We have shot them from blind, battery, and sink-box, and on many occasions have been impressed anew with the wisdom and cunning of these powerful gray-winged flyers.

"Where is the man who forgets the first time he ever shot at these magnificent birds? I well remember my first attempt—though it occurred more years ago than I will confess. Currituck Sound was the place, and the blind was on a little reedy island well out from shore. Cold and shivering, the boatman and I were crouching low behind the reedy screen, when a bunch of five were seen coming in. Straight up to the decoys they drove, dropped their feet, and alighted just outside. Springing to my feet, I fired two loads of BB shot as the great gray birds lumbered into the air—and did not touch a feather. What the boatman thought and what the shooter said are not on record, but many a big goose has dropped to my gun since, and there is no feeling of resentment left for those five that got away unscathed.

"More and more are live decoys taking the place of the artificial ones. I have seen tried (and shot over myself) the flat profile decoy, the hollow wooden image, and the inflated, water-proof kind; but a few live birds are, in my opinion, worth a boat-load of all other kinds."—H. H. Brimley.

Although an abundant species along our coast in winter, comparatively few are seen far in the interior. C. S. Brimley observes that years ago flocks were frequently seen flying over Raleigh, but he has not observed any in recent years. Many gunners unite in the statement that the moonlight nights of April is the favorite time for the big flight to leave for the North. On May 16, 1898, Pearson saw a flock of eighteen near Cape Hatteras, a date which his guide assured him was an unusually late one.

71. Branta bernicla glaucogastra (*Brehm.*). Brant.

Description.—Brownish, head and neck black, the latter with a patch of whitish streaks on each side. L., 24.00-30.00; W., 12.50-13.50.

Range.—Northern Hemisphere, breeding in the Arctic regions, in winter from Massachusetts to North Carolina.

Range in North Carolina.—Coastal region in winter.

"In Pamlico Sound the long extended lines of submerged sand-bars and mud-flats, with their abundant supplies of eel-grass, make an ideal winter resort for the Brant. They arrive from the North usually early in November, but the exact date depends much upon weather conditions. In flight they usually go in compact flocks without any apparent leader. They move slowly and often appear loath to leave a favorite feeding ground, even returning to it many times after being disturbed.

FIG. 58. BRANT.

"As the flesh is much esteemed for food, large numbers are annually killed and shipped to northern markets. In North Carolina it is customary to hunt them with the aid of wooden decoys. Twenty-five or thirty Brant decoys, together with perhaps a hundred others painted to represent Redheads, Canvasbacks, and Blackheads are anchored near a blind or floating battery in shoal water, often two or three miles from land. Here the hunter, well concealed, awaits the game which, lured from a distance by the flock of bobbing decoys, draws near to join their supposed friends. The birds fly slowly and often flit entirely around the battery before heading up to windward preparatory to alighting. While in this position, with the breast presented, feet lowered, and wings expanded, the Brant presents a mark which even the amateur sportsman cannot easily miss. If about to pass unnoticed, the gunner may frequently attract them by raising and lowering his foot or slowly lifting his cap aloft. I have seen them attempt to pitch among decoys after the attendant's boat had approached and two or three men were wading about gathering them in.

"On clear winter days, as one sails along the reefs in the region about Ocracoke or Hatteras, flocks of Brant, disturbed from their feeding areas, arise in almost constant succession for miles, their numbers running far into the tens of thousands. When heavy winds arise these large rafts are broken up, and later when the birds

are flying singly or in small companies, they readily draw to decoys. It is then that the gunners get in their most telling work, bags of seventy-five or a hundred birds being sometimes taken in a day. Near Cape Hatteras I once lay in a battery near a local gunner, who shot fifty Brant between the hours of 10 a. m. and 2 p. m., and the size of his kill in four hours occasioned no particular comment in the neighborhood.

"Brant retire to the far North upon the approach of spring, furnishing much shooting for the gunners *en route*. They gather in great numbers to breed on the cliffs and shores of Hudson Bay and the little known islands of the Arctic Sea."—Pearson.

72. Branta leucopsis (*Bechst.*). Barnacle Goose.

Description.—Brownish, head mainly white, the occiput, lores, neck, and chest black. L., 24.00-28.00; W., 15.00-17.00.
Range.—Northern Europe, occasional on the Atlantic coast of North America.
Range in North Carolina.—Has been taken twice on Currituck Sound.

This handsome goose, about the size of the Brant, is of rare occurrence in America, where in fact it appears to come only as a wanderer from the eastern hemisphere. Few specimens have been reported from the United States. Two of these were killed in Currituck Sound, one on October 31, 1870 (Cooke, *Distribution and Migration of North American Ducks, Geese, and Swans*). The other was taken by William S. Post of New York, on November 22, 1892. (Reported in a letter.)

Genus Dendrocygna (Swains.)

73. Dendrocygna bicolor (*Vieill.*). Fulvous Tree Duck.

Description.—Pale yellowish brown, darker on head and streaked with lighter on flanks, black line on nape and down back of neck; rump and tail black, lower and upper tail-coverts white; lesser wing-coverts brown, rest of wing black. L., 20.00; W., 9.50; T., 3.25. (Chap., *Birds of E. N. A.*)
Range.—Southwestern United States and southward through Central and South America; casual in Louisiana in summer.
Range in North Carolina.—Accidental on Currituck Sound.

A Fulvous Tree Duck was taken near Swan Island Club in Currituck Sound during July, 1886, and forwarded by W. Sohier to the National Museum, Washington, D. C. This odd, long-legged, goose-like bird is said to be found only on bodies of fresh or brackish waters, and at times will visit cornfields in quest of grain. Grinnell, in *American Duck Shooting*, says it "is exceedingly unsuspicious and readily permits approach, so that many of them are killed. When crippled, however, their strong legs enable them to run very fast, and, like all ducks, they are expert hiders, getting into the grass and lying there without moving."

Genus Olor (Wagl.)

74. Olor columbianus (*Ord.*) Whistling Swan.

Ads.—White; bill and feet black; *a small yellow spot on the lores;* tail usually with but 20 feathers. *Im.*—Head and neck brownish and rest of plumage more or less washed with grayish; bill and feet light. L., 55.00; W., 22.00; Tar., 4.00; Eye to N., 2.40; N. to tip of B., 2.25.

Remarks.—Few unquestionably distinct species of birds resemble each other more closely, superficially, than do the Whistling and Trumpeter Swans. In freshly killed specimens, at least in the spring, the yellow on the bill of the former and red on the bill of the latter is wholly and sufficiently diagnostic. Lacking these characters, which are always wanting in old, dried skins, the birds can be distinguished by the larger size of *buccinator* in connection with the fact that its nostrils are nearer the center of the bill than in *columbianus* (which has them nearer the tip), while *buccinator* usually has 24, instead of the 20 tail-feathers of *columbianus*. (Chap., *Birds of E. N. A.*).

Range.—North America, breeding far northward; in winter from Delaware to South Carolina, and westward.

Range in North Carolina.—Mainly on Currituck Sound in winter.

FIG. 59. WHISTLING SWAN.

The Whistling Swan is the largest of our water-fowl; and when swans gather, as they often do in immense flocks, the mass of snowy plumage presents a sight comparable only to a snow-bank or glistening ice-floe. They rise heavily against the wind, but when a safe altitude has been reached, the flock, with set wings, sails along in a manner truly magnificent.

Swans feed in shallow water, reaching down with their long necks for the water-grasses, small shellfish, and crustacea, which compose their chief diet. They are common winter residents in Currituck Sound, some few wandering regularly south of Roanoke Island. Small flocks are found in Pamlico Sound, but they are not often seen in the State south of there. Occasionally some straggler wanders inland. Such a one was killed on the Tar River near Louisburg in Franklin County by

J. J. Allen in December, 1903, and sent to the State Museum. One was shot on a mill pond near Greensboro in January, 1904, and exhibited for some days in the town at Clegg's Hotel. Pearson found one hanging in a market at Wilmington, December 26, 1893, which was said to have been killed on Wrightsville Sound.

A young swan is fairly good food, but disappointment lurks for the hungry man who attempts to partake of an old one, unless the muscular tissues have first been well softened by many hours of parboiling.

While seldom hunted, we have yet to meet a wildfowl gunner at work who did not—when such an act was legal—shoot a swan when opportunity occurred. Comparatively few, however, were killed in North Carolina even then.

As is the case with the Snow Goose, the head and upper neck of the Whistling Swan are often stained with reddish-brown.

VI. ORDER HERODIONES. HERONS, STORKS, IBISES, ETC.

This order is composed of wading-birds, of medium and large size, furnished with unusually long necks and legs. The toes are attenuated and often slightly webbed at the base. The young are altricial, being only partly downy. This order contains the birds known as herons, ibises, and storks, all voracious feeders on snakes, frogs, tadpoles, and other aquatic animal life. In North Carolina many of the representatives of this order are commonly known as "Cranes."

KEY TO FAMILIES

Three families occur in our fauna, to be distinguished by the following key:

1. Sides of upper mandible with a deep narrow groove, extending from the nostrils to the tip. Ibises. *Ibididæ.*
1. Sides of upper mandible without long deep groove. See 2.
2. Hind toe inserted more or less above the level of the others, middle claw not pectinate. Storks and Wood Ibises. *Ciconiidæ.*
2. Hind claw inserted on the level of the rest; middle claw pectinate on its inner edge. Herons and Bitterns. *Ardeidæ.*

The Roseate Spoonbill, *Ajaia ajaja* (*Linn.*), or Pink Curlew, which belongs to this order, doubtless occurred in North Carolina many years ago. There is a statement by Barton in *Fragments of Natural History, 1799*, that it was sometimes, though rarely, seen about the mouth of the Cape Fear River, North Carolina. (W. W. Cooke, U. S. Biological Survey, in letter, October 13, 1908.)

When at Lockwood's Folly, in the summer of 1898, strong evidence was presented to Pearson of the killing of one of these birds in that locality ten years previously. They are not now known to breed north of southern Florida, where they are occasionally found in flocks frequenting the margins of ponds, both inland and along the coast. This is a striking bird, from 28 to 35 inches in length. Its colors are mainly pink and white, and the long bill is flat and spoon-shaped, greatly widened near the tip.

14. FAMILY IBIDIDÆ. IBISES

Genus Guara (Reichenb.).

75. Guara alba (*Linn.*). WHITE IBIS.

Ads.—White, the tips of the four outer primaries black; bare parts of the head orange-red. *Im.*—Head and neck white, streaked with grayish brown; upper back and wings grayish brown; rump, breast, and belly white. L., 25.00; W., 11.00; Tar., 3.40; B. from N., 4.60. (Chap., *Birds of E. N. A.*)

Range.—North and South America, regularly from South Carolina to Brazil and Peru.

Range in North Carolina.—Occasional on our coast in summer.

The semi-inundated prairies of Florida appear to be the great stronghold of the White Ibis in the eastern United States. Here it may often be seen feeding by thousands in small scattered flocks. When alarmed they spring quietly in the air and depart with rapidly beating wings. In flight their appearance is striking, the extended neck and long curved bill readily aiding one to distinguish them from herons. For food they depend mainly on crayfish and other crustaceans. When roosting or engaged in nesting the White Ibis is found in trees, often in some almost inaccessible swamp. After the breeding season, some individuals wander northward along the Atlantic coast. On July 26, 1898, Pearson found three immature birds

FIG. 60. WHITE IBIS.

feeding on the marshes of North River near Beaufort. One was secured and is now preserved in the State Museum. A gunner of the region said that the birds were regular summer residents and were known as "Stone Curlews," but during various trips to this and other parts of the coast no additional specimens have been found.

As it is by no means improbable that the Glossy Ibis, *Plegadis autumnalis* (*Linn.*), may appear in North Carolina, it may be useful to state that it can be distinguished from the White Ibis by the plumage of the wings and tail being highly metallic in both old and young. Its range is from the Gulf States southward, but it has been known to wander northward occasionally as far even as Nova Scotia. It is now a very rare bird, and so far as known breeds in the United States only on an island owned and protected by the National Association of Audubon Societies in Alachua County, Florida.

15. FAMILY CICONIIDÆ. STORKS

Genus Mycteria (Linn.)

76. Mycteria americana (*Linn.*). WOOD IBIS.

Ads.—Head and neck bare; primaries, secondaries and tail glossy greenish black, rest of plumage white. *Im.*—Head more or less feathered; head and neck grayish brown, blacker on the nape; rest of plumage as in the adult, but more or less marked with grayish; wings and tail less greenish. L., 40.00; W., 18.00; Tar., 7.60; B. from N., 8.00. (Chap., *Birds of E. N. A.*)

Range.—North Carolina southward to Argentina.

Range in North Carolina.—Occurs irregularly in summer east of the mountains.

These great birds occur in enormous flocks about the lakes and prairies of central Florida, and may also be met with numerously as far north as South Carolina, where Arthur T. Wayne records them as breeding in Colleton County (*Birds of South Carolina*, p. 26). Like the White Ibis, they migrate northward in limited numbers during the summer months. One was killed early in July, 1884, at Garner, near Raleigh, and a number more were reported to have been seen at the time. One was secured at Chapel Hill June 12, 1901; a third specimen was taken at Buffalo's Pond in Wake County, July 4, 1906; and a fourth was killed June 29, 1910, near Sanford. A mounted specimen, said to have been killed on the Catawba River some years ago, was observed by Wayne at Morganton (see *Auk*, Jan., 1910).

16. FAMILY ARDEIDÆ. HERONS AND BITTERNS

KEY TO GENERA

1. Tail-feathers 10, very short, scarcely stiffer than the coverts; outer toe decidedly shorter than the inner; claws lengthened, slightly curved. Bitterns. See 2.
1. Tail-feathers 12, more lengthened and decidedly stiffer than the coverts; outer toe at least as long as the inner; claws comparatively short and strongly curved. Herons. See 3.
2. Size small, wing less than 6. *Ixobrychus.*
2. Size large, wing more than 9. *Botaurus.*
3. Bill comparatively long and narrow, the culmen equal to at least four times the greatest depth of bill. See 4.
3. Bill comparatively short and thick, the culmen not more than four times the greatest depth of bill. Night Herons. See 9.
4. Color always entirely pure white. See 5.
4. Color not wholly white; at least the tips of the wing-quills of another color. See 6.
5. Wing 14 or more. *Herodias.*
5. Wing less than 11. *Egretta.*
6. Wing 17 or more. *Ardea.*
6. Wing less than 12. See 7.
7. Wing less than 8. *Butorides.*
7. Wing more than 8. See 8.
8. Culmen decidedly shorter than tarsus, the latter more than 1½ times as long as middle toe without claw. *Florida.*
8. Culmen equal to or longer than tarsus, the latter less than 1½ times as long as middle toe without claw. *Hydranassa.*
9. Culmen about as long as tarsus; tarsus but little longer than middle toe. *Nycticorax.*
9. Culmen much shorter than tarsus; tarsus much longer than middle toe. *Nyctanassa.*

Genus Botaurus (Steph.)

77. Botaurus lentiginosus (*Montag.*). BITTERN.

Ads.—A glossy black streak on each side of upper neck; top of head and back of neck bluish slate, more or less washed with buffy; back brown, bordered and irregularly mottled with buffy and buffy ochraceous, wing-coverts similarly marked, but ground color grayer; underparts creamy buff, the feathers all widely streaked with buffy brown, which is finely speckled

with buffy and narrowly margined by brownish gray. *Im.*—Similar, but buffy everywhere deeper and more ochraceous. L., 28.00; W., 10.50; Tar., 3.50; B., 3.00. (Chap., *Birds of E. N. A.*)

Range.—North America north to central Canada; winters from Virginia southward to Guatemala and Porto Rico.

Range in North Carolina.—Winter visitor on coast, transient in central portion, summer visitor in mountain region. Not yet detected breeding in the State.

Owing to the retiring habits of this remarkable bird, it is not often seen by the casual observer even in regions where it is comparatively abundant. Although closely related to the herons, it is more like a rail in its manner of skulking through the tall grass of the marshes it frequents. The solemn, unearthly, sucking cry of this bird, heard from far out upon a lonely marsh in the late evening, is a note to haunt the memory.

FIG. 61. BITTERN.

We do not know that the Bittern breeds in North Carolina, although it is extremely likely that it does. Pearson heard its cries in June, 1902, issuing from the grassy shallows of Lake Ellis, and a short search on this occasion resulted in flushing a bird. H. H. and C. S. Brimley have frequently taken these birds at Raleigh between the end of March and May 30, and on one occasion in December. Coues saw one at Fort Macon in May, 1871. Atkinson recorded it from Chapel Hill. Cairns found it in Buncombe County from April to October. Bishop noted the bird at Pea Island, February 11, 1901, and again on May 5, 1902.

Genus Ixobrychus (Billb.)

78. Ixobrychus exilis (*Gmel.*). LEAST BITTERN.

Description.—Male chiefly glossy black above, brownish yellow below neck, shoulders and wings with chestnut; a buffy area on wing-coverts; female with brown instead of black; under tail-coverts white in both sexes. L., 12.75-14.50; W., 4.42-4.85; T., 1.50-1.75.

Range.—Breeds from southern Canada to Brazil, winters from the Gulf States southward.

Range in North Carolina.—Whole State in summer wherever there are marshes.

1. Collecting a nest, with nearly grown young, of Great Blue Heron. Great Lake, Craven County.
(Photo by H. H. Brimley.)

2. Young Black Skimmer crouching and hiding in bunch of seaweed. Note the protective coloration. Royal Shoal, Pamlico Sound.
(Photo by H. H. Brimley.)

Among the interesting forms of wild life inhabiting the fresh-water marshes, no bird is more weirdly fascinating than the Least Bittern. It haunts the rushes and cattails, and there constructs a frail nest but a few feet above the water. The young soon acquire great dexterity in climbing among the stems of the water-plants and few sights are more surprising than that of a young Least Bittern, erect and motionless, clinging to the stalk of a bullrush, with its long neck extended and bill pointing skyward. This is the attitude usually assumed upon the approach of an intruder, and so slender is its figure, and so well do the markings of the throat and breast blend with its environment, that one may readily pass without observing it. Upon taking wing, its flight is at first laborious and ungainly in the extreme. If, however, necessity requires that its journey be prolonged, the long legs are elevated to a plane with its body and the wing-strokes become rapid and graceful.

Fig. 62. Least Bittern.

These birds have been seen in limited numbers in various districts. H. H. and C. S. Brimley have found them frequently at Raleigh from May to September, where they breed rather commonly in May and June. They are summer residents in the marshes of Lake Ellis. Cairns took only two specimens in Buncombe County during many years of observation, which indicates that it is a rare bird in our mountains. This may, perhaps, be accounted for by the infrequency with which marshes are found in that territory.

Cory's Least Bittern, *Ixobrychus neoxenus* (Cory), which has the under tail-coverts always black, is known to breed near Toronto in Canada, and in southern Florida, and hence is liable to be found during the migrations at any intermediate point. It is much darker than the Least Bittern, but quite variable.

Genus Ardea (Linn.)

79. Ardea herodias herodias (*Linn.*). Great Blue Heron.

Ads. in breeding plumage.—Center of crown and throat white, sides of crown black, this color meeting on back of head, where the feathers are lengthened to form an occipital crest; neck pale grayish brown, a narrow black, white, and ochraceous line down the middle of the foreneck; feathers of lower foreneck narrow and much lengthened, whitish with sometimes black streaks; back, wing-coverts, and tail slaty gray, the scapulars paler, narrow and much lengthened; bend of wing chestnut-rufous; a patch of black and white feathers on side of breast; breast and belly streaked with black and white and sometimes pale rufous; feathers on legs dull rufous, legs and feet black; upper mandible olive-yellow, the culmen blackish; lower mandible yellow; lores blue. *Im.*—Similar, but entire crown black, throat white, neck brownish gray washed with buffy ochraceous; no black at sides of the breast or plumes on the lower neck; underparts streaked with black, slaty, white and ochraceous; bend of wings and feathers on legs paler; back slaty grayish brown without lengthened plumes. "L., 42.00-50.00; W., 17.90-19.85; B., 4.30-6.25; Tar., 6.00-8.00" (Ridgw.). (Chap., *Birds of E. N. A.*)

Range.—From Alberta and Ontario to the West Indies and Venezuela (except Florida in breeding season).

Range in North Carolina.—Present in the whole State in summer, but absent in winter in the mountain regions and to a great extent in the central portion of the State.

The Great Blue Heron, also known as the "Blue Crane," "Old Cranky," and "Long Tom," is a well-known bird throughout our State, arriving in the mountains in late March, and there are well-marked signs of migration at Raleigh at the same period, although the bird occurs there sparingly at all seasons.

FIG. 63. GREAT BLUE HERON.

With head held nearly five feet above the muddy shore on which the bird may be standing, its slender neck and dagger-like bill darting down at intervals to spear some luckless frog or fish, the Great Blue Heron presents a picture not easily forgotten. From the salt marshes of Dare County to the winding course of the Tennessee River its form is a familiar one, and many and wonderful are the local beliefs regarding its anatomy. One tradition holds that it possesses one straight intestine, while another gives it credit of bearing a phosphorescent bunch of feathers on its breast, by the light of which fish at night are lured to their destruction. Its nest is a heavy mass of sticks and twigs, generally placed in tall trees in swamps or along the margin of a lake.

Twenty pairs or more breed every year about the shores of Great Lake in Craven County. Pearson has also found their nests in Craven, Carteret, Onslow, and Brunswick counties. A colony of about one hundred pairs have for many years inhabited the tall cypress trees of the "Crane Neck" heronry on Orton Plantation, Brunswick County. When one is passing beneath these trees the young frequently disgorge masses of semi-digested fish, which rain down upon the intruders with fearful accuracy. The eggs are usually deposited in April and May.

1. Cypress tree; Great Lake, Craven County. This tree contained six nests of Great Blue Heron when photographed (1909), and had been used by these birds for several years.

(Photo by H. H. Brimley.)

2. The same tree one year later, when it held four heron nests and fifteen nests of Florida Cormorant. Note how the Cormorants tend to kill the trees they use for nesting purposes.

(Photo by H. H. Brimley.)

Genus Herodias (Boie)

80. Herodias egretta (*Gmel.*). Egret.

Description.—Pure white; adult in breeding season with very long dorsal plumes, reaching far beyond end of tail. L., 37.00-41.00; W., 14.00-17.00; T., about 6.00.
Range.—Breeds locally from North Carolina southward; winters from Florida south. In summer wanders as far north as Massachusetts. Breeds in southeastern Oregon.
Range in North Carolina.—Coastal region in summer, only occasional elsewhere.

No bird in America has so melancholy a history as the Egret. Those of us living today are witnessing the passing of the race, and we doubt seriously if a single individual will be alive in the United States twenty-five years hence, unless the

Fig. 64. Egret.

extraordinary precautions now being taken for their protection by the National Association of Audubon Societies should prove to be successful. Formerly it was an abundant inhabitant of the lakes and marshes of the Southern States; today it is restricted to a small number of localities in a few States. Its destruction has been due to the human craving for the beautiful, long airy plumes which grow from the back directly between the wings. The Audubon Societies have long fought to save it. By their efforts, laws have been enacted in all the States for its protection, and wardens have been employed to guard the few remaining breeding places of the birds. But the demand for the "aigrette" by the millinery trade has never ceased, and the lust for gold has carried the plume-hunters into the swamps, over

the bodies of two slaughtered Audubon wardens, and into the last colonies of the doomed birds. The butchery of the Egrets has been particularly harrowing because of the fact that the birds have the plumes only during the nesting period, and to kill an Egret for its feathers means the starvation of its brood.

We know of only one colony of Egrets now in North Carolina; this is located in Brunswick County and is carefully protected by Mr. James Sprunt, on whose property it is situated. We have visited the birds during the nesting period seven different times within the past twelve years, and have found them just about holding their own in numbers. The colony contained probably twenty pairs when discovered by Pearson in the summer of 1898. Their nests were high up in tall cypress trees. The lowest one discovered was at least forty feet and others were fully eighty feet above the water. Pearson also saw two nests with the birds attending them in a small colony on Jones's Mill Pond in Carteret County, June, 1899. Later in the season the place was raided by plume-hunters and the birds were killed. Individuals have occasionally been seen elsewhere in the State during the past twenty years. From six to twelve birds are still seen each summer on Lake Ellis. One was killed at Raleigh, June 15, 1884, and another shot at Chapel Hill in 1894. Two were also recorded by Bishop at Pea Island, July 30 and August 19, 1904. Francis Harper found a few breeding birds in a colony near Beaufort in July, 1913.

Genus Egretta (T. Forst.)

81. Egretta candidissima candidissima (*Gmel.*). SNOWY EGRET.

Ads. in breeding plumage.—Entire plumage pure white; about fifty *recurved* "aigrette" plumes grow from the interscapular region and reach to or just beyond the end of the tail; legs *black*, feet *yellow*, bill *black*, yellow at the base; lores orange-yellow. *Ads. after the breeding season and Im.*—Without the interscapular plumes. L., 24.00; W., 9.75; Tar., 3.80; B., 3.20. (Chap., *Birds of E. N. A.*)

Range.—Breeds from southern North Carolina southward; winters from Florida southward to South America.

Range in North Carolina.—Coastal region in summer; now very rare.

The fate of the small Snowy Egret is scarcely less sad than that of the large Egret. In fact, today it is decidedly the rarer bird. This is the heron from which comes the short curved plumes known to the millinery trade as "cross aigrettes." Like other herons, these birds assemble in colonies upon the approach of the breeding season, and to find one nesting place means finding all the birds of the species which are breeding in a surrounding area of many miles. The one colony of herons of the first magnitude still remaining in the State is at Crane Neck on the Orton Plantation in Brunswick County. It is situated in a growth of cypress trees in a little bay in the old rice-pond. Here it is believed the Snowy Egret is making its last stand in North Carolina. Ten or twelve pairs were found there by H. H. Brimley and Pearson in June, 1908. The nests were scattered among those of other small herons, and the resemblance both of the nests and eggs was such that we found it impossible to identify them positively except in the few instances when the birds were actually seen occupying their nests.

Records of the Snowy Herons appearing in other parts of the State are few, and several of these are dubious. Coues regarded the bird as a summer resident at

1. Two young American Egrets in the tops of the tall cypresses of Crane Neck.
(*Photo by T. W. Adickes.*)

2. In the tall trees of Crane Neck Rookery. Nest and two young of American Egret.
(*Photo by T. W. Adickes.*)

Fort Macon in 1870, but found none breeding. Atkinson mentions in his list of North Carolina birds a specimen in the collection of James Busbee, from Wilmington. Cairns took one in Buncombe County, but the date appears not to have been recorded. Bishop secured a pair at Pea Island, April 22, 1905.

Fig. 65. Snowy Egret.

Genus Hydranassa (Baird)

82. Hydranassa tricolor ruficollis (*Gosse*). Louisiana Heron.

Description: Ads.—Upperparts dark bluish slate-color; back of head and upper neck with elongated chestnut-rufous and white feathers; back with pale brownish gray "aigrette" plumes reaching to tail; lower back, rump, and belly white; neck bluish slate-color; throat white, an indistinct rufous line down the middle of foreneck; legs blackish; base of bill and lores bluish. *Im.*—Throat, and an indistinct line down the foreneck white; rest of head and neck brownish rufous; upper back and wings bluish slate-color, more or less washed with brownish rufous; no plumes; lower back, rump, and belly white; breast with more or less slaty streaks; legs yellow behind, blackish before; lower mandible and lores orange; upper mandible black. L., 26.00; W., 10.00; Tar., 3.70; B., 3.90. (Chap., *Birds of E. N. A.*)

Range.—Breeds from North Carolina to Central America; winters from South Carolina southward.

Range in North Carolina.—Coastal region in summer.

Beautiful and graceful in the extreme, it is little wonder that many of the earlier ornithologists called this bird "Lady of the Waters." Although inhabiting fresh as well as salt-water bodies, the Louisiana Heron in North Carolina is a bird of the coast region, and rarely if ever wanders far inland. In the territory where it is found it is one of the most abundant of the waders, and it is therefore singular that its presence has not been noted in any of the State lists of birds heretofore published. Apparently the first specimen recorded was on April 20, 1898, when Pearson, while standing at the very point of the beach at Cape Hatteras, watched one fly slowly in from the sea. The next month he found four heronries in which the birds were breeding. These were situated as follows: one at Jones's Pond, Carteret County; one in a small pond near Shallotte in Brunswick County; and two, Crane Neck and Tom Branch, on Orton Pond. The largest colony today is at Crane Neck, where

FIG. 66. LOUISIANA HERON.

probably eight hundred or a thousand pairs assemble in summer. The colony at Tom Branch was continuously raided by eggers in the summer of 1899 and the birds deserted the region, probably joining their neighbors at Crane Neck a few miles distant. Pearson found them common on the marshes of North River a few miles from Beaufort in July, 1898. The most northern record of its appearance in North Carolina is that noted by Bishop at Pea Island. He found several there between August 5 and 25, 1904.

Genus Florida (Baird)

83. Florida cærulea cærulea (*Linn.*). LITTLE BLUE HERON.

Ads.—Head and neck maroon-chestnut; rest of plumage dark bluish slate-color; interscapulars and lower neck-feathers lengthened and narrowly pointed; lores blue; legs and feet black. *Im.*—White, plumage sometimes more or less washed with slaty; *tips of the primaries always bluish slate-color*; legs, feet and lores *greenish yellow*. L., 22.00; W., 10.25; Tar., 3.70; B., 3.00.

Remarks.—Between the young and adult there is every stage of intergradation of color, some specimens being irregularly marked with blue and white in about equal proportions. Young birds are sometimes mistaken for Snowy Herons, but can always be distinguished by the greenish yellow legs and slaty tips of the primaries. They breed in the white plumage. (Chap., *Birds of E. N. A.*)

Range.—Breeds from North Carolina southward; winters from South Carolina southward. Formerly bred as far north as Indiana and New Jersey.

Range in North Carolina.—Breeds in the coastal region, and after the breeding season the young in the white plumage scatter all over the State during July and August.

One of the most abundant herons in the State is the Little Blue. When hatched it is white, and not until the summer of the second year does it acquire its blue plumage. In central and western North Carolina it is most usually found in the white phase. This is the common "Little White Crane" seen in July and August inhabiting our streams and mill-ponds. While still wearing the white plumage of youth, it mates and rears young, being one of the comparatively few birds with this peculiarity.

Fig. 67. Little Blue Heron.

On April 30, 1898, Pearson found a colony nesting on Lake Head Island, in Mattamuskeet Lake, Hyde County. The nests were built in cypress and willow trees, at distances varying from fifteen to forty feet from the ground. One unusual fact noted was that the trees were not standing in water, but on virtually dry ground. Many eggshells with holes torn in one side were found scattered about the ground, and the creators of this mischief were soon discovered in the form of a pair of Fish Crows, which were seen making off with eggs in their bills. These black disturbers are always found about heron colonies.

At this date a large part of the hundred or more nests seen appeared to contain eggs. Five nests were examined, all of which held four eggs. Four other nests had five eggs each. No young birds were found; in fact, none of the eggs observed seemed to be in an advanced stage of incubation. The heron life here appeared to be typical of that found to exist in the other breeding colonies of these birds. The same summer Pearson found the Little Blues associated numerously with the Louisiana Herons in the colonies before mentioned as being in Carteret and Brunswick counties. In 1909 H. H. Brimley discovered that about twenty pairs had established themselves in the trees on the southern shore of Great Lake, in Craven County. On June 18 all of the nests contained eggs, but two days later every egg had disappeared. Their destruction was attributed to Fish Crows.

Genus Butorides (Blyth)

84. Butorides virescens virescens (*Linn.*). GREEN HERON.

Ads.—Crown and a short line below eye glossy greenish black; throat buffy white, this color extending down foreneck as a narrow line mixed with blackish, widening on breast; rest of head and neck rufous-chestnut glossed with vinaceous; back, with lengthened inter-scapulars, green, more or less washed with bluish gray; wing-coverts green, margined with white or buffy; belly ashy gray, more or less washed with buffy. *Im.*—Similar, but with neck and underparts streaked with blackish; back without lengthened feathers or wash of blue-gray; wing-coverts widely margined with buffy ochraceous. L., 17.00; W., 7.25; Tar., 1.90; B., 2.50. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding from southern Canada to the West Indies; winters from the West Indies southwards and rarely in the United States.

Range in North Carolina.—Whole State in summer, arriving in late March or early April and staying till early October.

The Green Heron, also known as "Scow," "Shypoke," "Scout," "Indian Hen," and "Fly-up-the Creek," is the smallest of the true herons, and is familiar to most farm-boys of the State. Mill-ponds and the banks of rivers and creeks are its

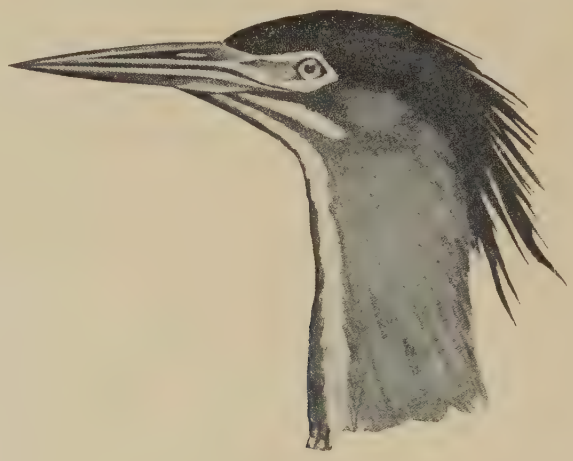


FIG. 68. GREEN HERON.

favorite haunts. It wades cautiously through the shallow water looking for frogs, fish, salamanders, or other small aquatic life upon which it preys. When alarmed, the startled "squawks" it emits recall to the mind of many a man his early swimming or fishing experiences. The Green Heron's nest is characteristic of those of the family, being a slight affair built loosely of twigs. Frequently it is placed in a bush or tree growing in the water, but more often, perhaps, the tree selected is on land; sometimes it nests in oak, apple, or other trees, a mile or more from the nearest feeding place.

On April 15, 1898, Pearson found three of its nests near Lake Landing in Hyde County, which were placed on the horizontal limbs of cedar trees about fifteen feet from the ground. They were made entirely of cedar twigs and were so frail that the five blue eggs in one could be counted through the nest from below. Green Herons appear to be common summer residents throughout the State.

Genus Nycticorax (T. Forst.)

85. Nycticorax nycticorax nævius (*Bodd.*). Black-crowned Night Heron.

Description: Ads.—Forehead, lores, neck and underparts white or whitish; crown, upper back and scapulars glossy, greenish black; lower back, wings and tail ashy gray; legs and feet yellow; lores greenish; two or three white rounded occipital plumes about 8.00 in length. *Im.*—Upperparts grayish brown, the feathers streaked or with wedge-shaped spots of white or buffy; outer web of primaries pale rufous; underparts white, streaked with blackish. L., 24.00; W., 12.00; Tar., 3.20; B., 3.00. (Chap., *Birds of E. N. A.*)

Range.—Breeds from Canada to Patagonia; winters from Gulf States southward.

Range in North Carolina.—Coastal region only in summer.

Fig. 69. Black-crowned Night Heron.

At the time of the publication of Smithwick's list of North Carolina birds, in 1897, this bird was known in the State only by a few specimens taken in Carteret and Buncombe counties. We now know it to be a regular summer bird in the coast country, nesting commonly in rookeries with other herons. A few pairs each summer associate with the Cormorants on Great Lake and make their nests in the cypress trees used by their fierce black neighbors. On April 30, 1898, Pearson found a nest with two freshly laid eggs and one with four slightly incubated eggs in the heron colony on Lake Head Island, Mattamuskeet Lake. Apparently this was the first record of the birds breeding in the State. Night Herons' nests are commonly more bulky structures than those usually constructed by other members of

this family. So far as known, it does not breed in central or western Carolina, but after the nesting season wanders to all parts of the State. It is largely a nocturnal species, and prefers to pass the daytime dozing among the foliage of thickly leaved trees. In Carteret County it is eaten by some of the inhabitants along Core Sound, but its flesh can hardly be considered a choice food. There has been for several years a large colony on Harker's Island a few miles from Beaufort, and Pearson has found colonies in Onslow and Brunswick counties.

Genus Nyctanassa (Stejn.)

86. Nyctanassa violacea (*Linn.*). YELLOW-CROWNED NIGHT HERON.

Description.—Grayish plumbeous, darker on back, and streaked with black; head mostly black; the crown and chest tawny white, a white streak behind eye; young grayish brown, streaked and spotted, known by the structural characters. L., 22.00 to 28.00; W., 10.50 to 12.50.

Range.—In summer from North Carolina to Brazil; winters from Florida southward.

Range in North Carolina.—Coastal region in summer, and occasional inland; rare.

Rare and retiring in its habits, the Yellow-crowned Night Heron has been seldom seen by ornithologists in North Carolina. Atkinson mentions one taken at Beaufort in 1887. An adult was exhibited at the Fish and Oyster Fair in New Bern in 1892, and an immature mounted specimen was shown there in 1893. C. S. Brimley shot an immature female at Raleigh, June 25, 1894, and an immature male July 14, 1894. On June 13, 1894, Pearson secured an immature bird near Guilford College in Guilford County, and the mounted specimen is in the museum at that institution. One was killed by Owen Primrose in Johnston County, May 13, 1898, and sent to the State Museum. It was an adult. In May, 1909, H. H. Brimley and Pearson observed at close range an adult on Dutchman's Creek, which runs through a salt-marsh a few miles from Southport in Brunswick County. Three adults were seen by C. S. Brimley in marshes bordering on Walnut Creek near Raleigh, April 14, 1911. We do not know that the birds breed in the State, but it is highly probable that they do. Pearson has found them nesting on several occasions in Florida, and says that in every instance the colonies contained about ten or fifteen pairs, and no other herons were found associated with them.

VII. ORDER PALUDICOLÆ. THE MARSH-BIRDS.

This order includes cranes, rails, and allied forms. They are birds of moderate or large size, and usually dwell in marshes or wet meadows.

The Sandhill Crane, *Grus mexicana* (*Müll.*) belonging to the family *Gruidæ*, is a large bird with long legs and neck, resembling a heron to that extent. In the adult the top of the head is covered with rough, dull-reddish skin, thinly sprinkled with short "hairs." We have no positive record of the appearance of the bird in the State. It is known to breed in Florida, Georgia, and westward and northward through the Mississippi Valley to Manitoba. In various trips through Brunswick County, Pearson has been told repeatedly of a large bird which frequents the open pond-dotted pine-woods, and known as the "Savannah Crane." In company with

YELLOW-CROWNED NIGHT HERON. Nyctanassa violacea (Linn.) Adult above, immature below.

H. H. Brimley, he has made expeditions into this thinly settled section of the State to verify, if possible, the reports of the occurrence of this strange bird. These trips have been without result other than to convince both men that the Sandhill Crane is a regular, although not common, summer resident in this region. Wayne says in *The Birds of South Carolina*, page 34: "The specimens which were in the Charleston Museum were taken on the Waccamaw River." The Waccamaw River flows through Brunswick County, North Carolina, and empties into the Little Pee Dee River, not more than sixty miles from the boundary between the two States.

The Limpkin or Crying-bird, *Aramus vociferus* (*Lath.*), belonging to the family *Aramidæ*, somewhat resembles a large rail. The adult is "glossy olive-brown, the feathers of the head and neck narrowly, those of the body broadly striped with white; wings and tail more bronzy." Length about 28 inches. The usual range of this bird is from Florida southward through the West Indies and Central America. Wayne records in *The Birds of South Carolina* the capture of three specimens in that State. It is just possible that it may come occasionally to North Carolina. Pearson and H. H. Brimley had a bird described to them by a man who killed it in Brunswick County in May, 1908, which was probably of this species.

17. FAMILY RALLIDÆ. RAILS, GALLINULES, AND COOTS

KEY TO GENERA

1. Forehead covered by a shield-like extension of the culmen. See 2.
1. No shield-like extension of culmen over forehead. Rails. See 4.
2. Front toes provided on their sides with broad, lobed membranes. *Fulica.* (Coots.)
2. Front toes without membranous flaps on sides. Gallinules. See 3.
3. Nostrils small, oval. Middle toe without claw shorter than tarsus. *Ionornis.*
3. Nostrils elongate, slit-like. Middle toe without claw longer than tarsus. *Gallinula.*
4. Bill slender, as long as or longer than the tarsus. *Rallus.*
4. Bill stout, not more than two-thirds as long as the tarsus, usually much less. See 5.
5. Secondaries white. *Coturnicops.*
5. Secondaries not white. See 6.
6. Wing more than 4 inches. *Porzana.*
6. Wing less than 3¾ inches. *Creciscus.*

Genus Rallus (Linn.)

This genus comprises the larger, long-billed rails, of which four species and subspecies occur in the State.

KEY TO SPECIES AND SUBSPECIES

1. Size smaller, wing less than 4½ inches. *Virginia Rail.*
1. Size larger, wing more than 5 inches. See 2.
2. Upperparts with much reddish brown. *King Rail.*
2. Upperparts more or less grayish. See 3.
3. Feathers of the back centrally pale brown, their edges pale ashy, underparts usually less ashy. *Clapper Rail.*
3. Feathers of the back centrally rich seal brown, their edges bright ashy, underparts usually more ashy. *Wayne's Clapper Rail.*

87. Rallus elegans (*Aud.*). KING RAIL.

Ads.—Upperparts varying from olive-brown to black, the back and scapulars widely margined with olive-gray; wings and tail olive-brown; wing-coverts *rufous*; throat white; neck and breast *cinnamon-rufous*; belly and sides *fuscous*, sharply barred with white. *Downy young.*—Glossy black. L., 15.00; W., 6.50; Tar., 2.20; B., 2.40. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding from New York to Florida; wintering mainly south of North Carolina.

Range in North Carolina.—Fresh-water marshes in summer; occurs to some extent in winter from Raleigh eastward.

This is the common rail of fresh-water marshes, and it appears to dwell wherever these are found. Its nest is constructed among the rank grasses or rushes of its haunts, and the pile of dead cattail or bulrush leaves which it usually gathers for this purpose is sometimes as much as twelve inches in height. Freshets are particularly destructive to these nests, and large numbers of eggs are thus annually destroyed. The King Rail is an adept at hiding, and, when disturbed, its compressed body, propelled by long stout legs, passes with great rapidity through the thickest growth of water-plants. When forced to take wing, its flight is at first slow and exceedingly clumsy.

FIG. 70. KING RAIL.

C. S. Brimley states that at Raleigh, where it is a common bird, it usually appears about April 1 and departs about September 1. Single ones, however, have been taken later in autumn and some have been seen even in winter. King Rails breed in May, June, and July.

88. **Rallus crepitans crepitans** (*Gmel.*). CLAPPER RAIL.

Ad.—Upperparts very pale greenish olive, the feathers widely margined with gray; wings and tail grayish brown; wing-coverts pale cinnamon much washed with gray; throat white; neck and breast *pale*, between ochraceous and cream-buff, more or less washed with grayish; belly and sides gray or brownish gray, barred with white. *Downy young.*—Glossy black. L., 14.50; W., 5.00; Tar., 2.00; B., 2.50.

Remarks.—The Clapper Rail may always be known from the King Rail by its generally grayish instead of brownish or blackish upperparts, and its much paler breast and flanks and paler wing-coverts. (Chap., *Birds of E. N. A.*)

Range.—Salt-marshes of Atlantic coast, breeding from North Carolina to Connecticut.

Range in North Carolina.—Salt-marshes of the coastal region.

Clapper Rails are abundant residents in the salt-marshes along the coast, their loud rattling calls constituting the most characteristic bird-notes of the region. They are regarded as game-birds, and are commonly shot in the autumn from boats punted through the marshes at high tide. In some localities they are particularly numerous in summer. Such a place Pearson found "Jack's Grass" to be on May 13, 1898. We quote from notes made at the time: "This is a low island of perhaps twenty acres, situated in Pamlico Sound, very near New Inlet. A channel runs on

either side. It has no trees, but is covered rather uniformly with grass eight or ten inches high. Small clumps of rushes, growing rarely over three feet high, are, however, scattered over the island. The earth at these spots is usually elevated about a foot above the surrounding marsh, and in nearly every one of them a rail's nest was found. These were composed entirely of marsh-grass, blades and stalks, and were built from six to eight inches above the wet sod. The fragments of grass used varied from four to six inches in length, shorter pieces being employed for

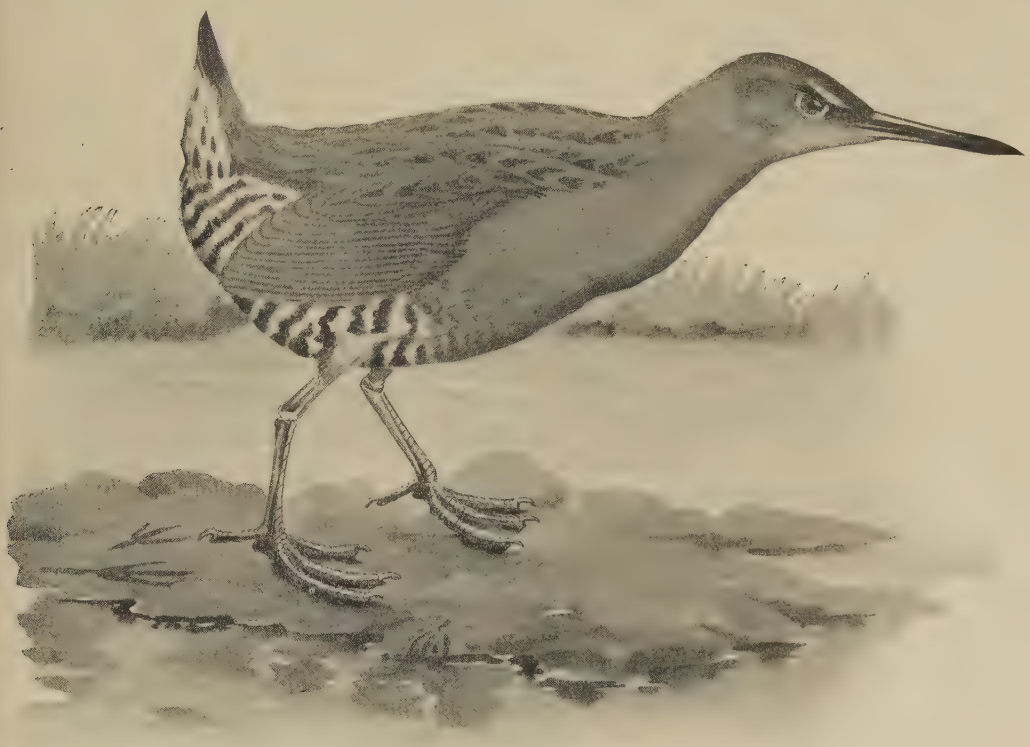


Fig. 71. Clapper Rail.

the top layers. The nests measured about eight inches across the top, the horizontal thickness being uniform from the bottom. Each of two of the nests examined held eight slightly incubated eggs, and one with ten eggs was seen. One was found with two freshly deposited eggs, and another with four incubated eggs. Eggshells from which the young had but shortly departed were found in one instance. Usually the eggs were not screened from view by any arching of the grass or rushes. Along the banks of the tide-creeks the marsh-grass was often two feet or more in height. Here were the many covered runways of the birds, some of them several yards in length."

This visit to Jack's Grass was in the days before the discovery of the variety known as Wayne's Rail, which very closely resembles the Clapper Rail, and as no specimens were shot and preserved, it is impossible to state which of the two forms may have predominated. Clapper Rails are known to have been taken at Fort Macon and Pea Island. A rail shot by Pearson on Dutchman's Creek in Brunswick County, August 14, 1909, and laboriously retrieved by H. H. Brimley, proved to be a typical Clapper Rail. Three specimens in the American Museum of Natural History, New York City, were taken at Hatteras on March 2, 3, and 7, 1900.

89. Rallus crepitans waynei (*Brewst.*). WAYNE'S CLAPPER RAIL.

Description.—"Similar to *R. crepitans*, but the general coloring much darker, the underparts with more ashy, the under tail-coverts with fewer markings" (Brewst., *Proc. N. E. Zoöl. Club*, I, 1899, p. 50).

Range.—Salt-marshes of the south Atlantic coast from North Carolina to Florida.

Range in North Carolina.—Salt-marshes of the coastal region. The exact distribution of the two Clapper Rails in the State is not yet well understood, most of our records dating from before the time when *waynei* was first recognized.

Bishop reports this bird to be a common summer resident on Pea Island, breeding in May, its habits being in no way distinguishable from those of the Clapper Rail. He also mentions a female taken on February 9 and a male on February 11, 1901, both of which were pronounced typical by Brewster, who first described this subspecies. (*Auk*, 1901, p. 265.) Four specimens in the American Museum of Natural History, New York City, were collected at Hatteras on November 7, 1899, and on March 3, May 5, and July 9, 1900.

90. Rallus virginianus (*Linn.*). VIRGINIA RAIL.

Ad.—Upperparts fuscous or black, the feathers bordered by pale grayish brown; wings and tail dark grayish brown; wing-coverts rufous, lores whitish, cheeks gray, throat white; rest of the underparts cinnamon-rufous; flanks and under tail-coverts barred or spotted with black and white. *Downy young.*—Glossy black. L., 9.50; W., 4.30; Tar., 1.30; B., 1.50.

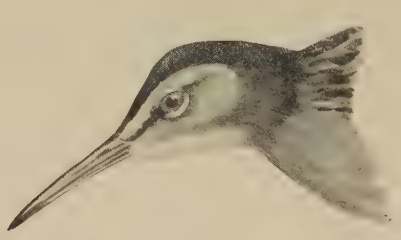


FIG. 72. VIRGINIA RAIL.

Range.—North America. Breeds from British Columbia, southern Saskatchewan, southern Keewatin, Ontario, southern Quebec, and New Brunswick south to southern California, Utah, Kansas, Missouri, Illinois, New Jersey, and eastern North Carolina, and in Toluca Valley, Mexico; winters from Oregon, Utah, and Colorado, to Lower California and Guatemala; also in the Lower Mississippi States, and from North Carolina (casually Massachusetts) to Florida; occurs occasionally north to northern Quebec and Newfoundland. (Chap., *Birds of E. N. A.*)

Range in North Carolina.—Apparently resident in at least portions of the coastal region; migrant in rest of State.

The Virginia Rail, although smaller than the King Rail, much resembles it in general appearance. Its range as a breeding bird has not usually been supposed

to reach North Carolina. This fact added greatly to the interest of the discovery of a nest with four fresh eggs on Gull Shoal Island, in Pamlico Sound, Dare County, by Pearson, on May 20, 1898. The top of the nest was just twelve inches above the mud in which the rushes were growing that supported it. It measured six inches across the top. The eggs were retained in Pearson's private collection until destroyed by mice four years later. Bishop took a moulting female at Pea Island on February 9, 1901. (*Auk*, 1901, p. 265.) H. H. Brimley saw one at close range on Lake Ellis, May 16, 1906. He regards the species as a rare transient at Raleigh, where he has taken specimens on the following dates: March 7, 1891; April 11 and 25, 1894; April 12, 1898; April 26 and May 1 and 9, 1900; May 3 and 6, 1889; September 8, 1896, and October 9, 1893. Wayne, in *Birds of South Carolina*, says that in autumn the Virginia Rails frequent fields where pea-vines are growing and about ready to be harvested, and appear not to be dependent on water when in such situations.

Genus Porzana (Vieill.)

91. Porzana carolina (*Linn.*). Sora.

Description.—Olive brown, streaked, breast slate-gray, back streaked; belly barred. Adult with face and middle line of throat black. L., 7.87-9.25; W., 3.87-4.36; T., 1.75-2.12.

Range.—North America, breeding from New Jersey northward; winters from South Carolina southward.

Range in North Carolina.—Whole State during the migrations.

Fig. 73. Sora.

The Soras are common transients in North Carolina. During the early autumn they frequent the rice-fields and many of the marshes of the eastern part of the State. Being choice articles of diet, they are in great demand, especially in the Wilmington market, where they are known as "coots." Large numbers are taken at night by means of a torch and stick, in the grass along the margins of ditches and creeks. Upon the approach of frost they depart suddenly, by night, for the South. This abrupt disappearance from regions where the day before they were common is a source of mystification to many people, and in New Hanover County there are negroes who solemnly assert that the birds turn into frogs and go into the mud for the winter.

The records made by C. S. Brimley at Raleigh, during a period of ten years, show the earliest fall record of the Sora there to have been August 21, and the

latest October 30. In the spring his earliest record is April 8, and the latest May 13. Cairns in 1894 found them at Weaverville, Buncombe County, September 1 to 6, and April 30 to May 6. Bishop has taken them at Pea Island, Dare County, May 13, 1901, and May 10, 1902. H. H. Brimley saw one on Lake Ellis May 12, 1906, and another was killed by him on May 13, 1911. One was brought to Pearson at Greensboro, August 19, 1909, which had evidently been killed the night before by striking a telephone wire.

Genus Coturnicops (Bonap.)

92. Coturnicops noveboracensis (*Gmel.*). YELLOW RAIL.

Description: Ads.—Upperparts black, the feathers bordered with ochraceous-buff and with from one to three narrow white bars; breast ochraceous-buff; middle of the belly white; sides and lower belly black or brownish, barred with white. L., 7.00; W., 3.40; Tar., .95; B., .52. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding from Maine northward; winters in the Gulf States.

Range in North Carolina.—Whole State during the migrations; rare; winters in the east.

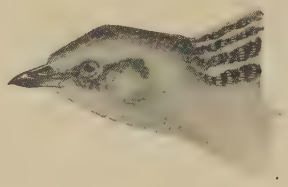


FIG. 74. YELLOW RAIL.

The Yellow Rail is without doubt a rare bird in this State. Coues saw one in Carteret County, April 12, 1870; H. H. Brimley found two exhibited in the flesh at the New Bern Fair in February, 1892; and Cairns took a male at Weaverville, Buncombe County, October 19, 1894.

One was sent to Pearson by M. W. Haynes of Tarboro, who stated that he picked it up at that place on the morning of September 23, 1908. It had been killed during the previous night by flying against a telephone wire. Bishop secured two on Pea Island, Dare County, in 1908; one, an adult male, was killed December 20, the other, also an adult male, was taken about December 26. A living specimen was brought to Pearson at Greensboro October 4, 1910, by a colored man, who said he had just caught it in a barn near town.

The Pea Island and New Bern records would seem to show that the species may winter in the coastal region, while the others indicate it to be only a migrant in the rest of the State. Any conclusions as to its actual rarity or abundance can only be surmises, as the bird is of extremely unobtrusive and skulking habits. It is an inhabitant of wet meadows and is said to be exceedingly difficult to flush.

Genus Creciscus (Cab.)

This genus contains two species in North America. One is found on the Pacific coast of the United States, the other in the East.

93. Creciscus jamaicensis (*Gmel.*). Black Rail.

Ads.—Head, breast and upper belly slate-color; lower belly and wings brownish black, barred or spotted with white; nape dark reddish brown. L., 5.00; W., 2.80; Tar., .80; B., .60. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America breeding from South Carolina to Canada, and wintering through the Gulf States to Jamaica and Guatemala.

Range in North Carolina.—Nearly the whole State, apparently only in summer.

The Black Rail, the smallest member of the rail family in the United States, is one of those secretive creatures the comparative abundance of which is difficult to determine. It probably is a regular summer resident in the State.

Near Raleigh, along the course of Walnut Creek, are numerous patches of meadow-land, some of which are annually cut for hay. It is here and principally on these occasions that the Black Rails have been brought to our attention. From 1890 to 1902 eight nests with eggs were secured by H. H. and C. S. Brimley from the negro mowers.

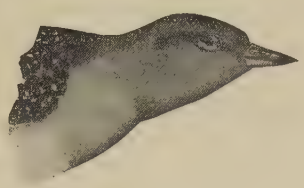


Fig. 75. Black Rail.

Small in size, inhabiting the thick meadow-growth, and virtually never taking wing when disturbed, it is as hard to find as a ground-loving mouse.

The eight sets of eggs secured at Raleigh were taken at dates varying from May 27 to July 12. Fresh eggs were found as late as June 28 and eggs far gone in incubation as early as June 8. The number seems to vary from six to eight.

Other North Carolina records are as follows: Statesville, found breeding by McLaughlin; Jamestown, Guilford County, one adult and two downy young taken by Pearson in June, 1893; Lake Ellis, one seen early in October, 1909, by H. H. Brimley.

Genus Ionornis (Reichenb.)

94. Ionornis martinicus (*Linn.*). Purple Gallinule.

Ad.—Front of crown with a bare, bluish-plumbeous plate; rest of head and underparts rich, dark, purplish blue; under tail-coverts white; back shining olive-green; wings light blue tinged with greenish; bill carmine, tipped with pale greenish (in skins, reddish orange, tipped with yellowish); legs yellow. *Im.*—Upperparts more or less washed with brownish; underparts more or less mottled with white; plate on the head smaller; bill without orange-red. *Downy young.*—Glossy black, head with numerous white, hairlike feathers; base of the bill yellowish, end black. L., 13.00; W., 7.10; Tar., 2.40; B., from posterior margin of nostril, .80. (Chap., *Birds of E. N. A.*)

Range.—Breeds from South Carolina southward to Paraguay; winters from the Gulf States southward.

Range in North Carolina.—Only occasional; so far only recorded from Craven and Wake counties.

This brilliantly colored bird does not appear to come often to North Carolina and diligent search by us in suitable regions of the State has as yet failed to reveal its nest. H. H. Brimley shot one which had alighted in a tree on the border of a pond near Raleigh on June 6, 1887. Another specimen in the State Museum was sent from Craven County. We have no other records of its occurrence within our borders. It is a marsh-loving bird and should be looked for among rushes or lily-pads about the margins of fresh-water ponds or lakes. Its nesting habits are like those of the rails.

Genus Gallinula (Briss.)

95. Gallinula galeata galeata (*Licht.*). FLORIDA GALLINULE.

Ad.—Dark bluish slate color; back and scapulars washed with olive-brown; belly whitish; flanks with a few conspicuous white streaks; under tail-coverts white; crown with a bare, bright-red plate; bill the same color, tipped with yellowish; legs bright-red at the tibiæ. *Im.*—Similar, but underparts grayish white; crown-plate much smaller and the bill brownish; no red on the legs. *Downy young.*—"Glossy black, the lowerparts sooty along the median line; throat and cheeks interspersed with silvery white hairs" (Ridgw.). L., 13.50; W., 7.00; Tar., 2.15; B., from posterior margin of nostril, .80. (Chap., *Birds of E. N. A.*)

Range.—Breeds from New York southward; winters from Georgia southward.

Range in North Carolina.—Occasional during the migrations in all parts of the State. Has been detected breeding in Craven County.

FIG. 76. FLORIDA GALLINULE.

The Florida Gallinule inhabits reedy lakes and the backwaters of rivers, building its nest, like the rails, among the tall stems of water-plants. We know of only one nest having been found in the State. This was discovered on Lake Ellis, Craven County, by P. B. Philipp, June 16, 1909. Thinking he had found a nest of the King Rail, and desiring to get a photograph of the bird, he set his camera and from a distance liberated the shutter with a string the moment when, from his hiding-place, he discovered a bird entering the nest. Upon developing the plate he found that the camera had made an interesting addition to North Carolina ornithology, for the bird was a Florida Gallinule.

In addition to this we possess but seven records of the bird in North Carolina. These are as follows: Craven County, one taken by Clarke and Morgan, 1884; Bertie County, one found helpless in a dooryard after a rain, June 6, 1892; Orange

PURPLE GALLINULE. Ionornis martinicus (Linn.)

County, one taken in 1892; Buncombe County, one killed by Cairns, May 16, 1891; one seen alive in a store-window at Asheville, by Brewster, May, 1885; one caught alive in Wake County by Bruner, April 20, 1907; and, finally, an immature specimen picked up dead on the streets of Raleigh on September 21, 1918. This latter specimen showed a shot-wound, on being skinned; it was perfectly fresh and excessively fat.

Genus Fulica (Linn.)

96. Fulica americana (*Gmel.*). COOT.

Ads.—Head and neck blackish; rest of plumage dark, bluish, slate-color, paler below; edge of wing, *tips of secondaries*, and under tail-coverts white; bill whitish, two spots near its tip and crown-plate brownish; legs and feet greenish; toes with *scalloped flaps*. *Im.*—Similar, but much whiter below, a slight brownish wash above; crown-plate much smaller. *Downy young.*—Blackish, white below; throat and upperparts with numerous bright *orange*, hairlike feathers; lores red; bill red, tipped with black. L., 15.00; W., 7.50; Tar., 2.25; B., from posterior margin of nostril, .80.

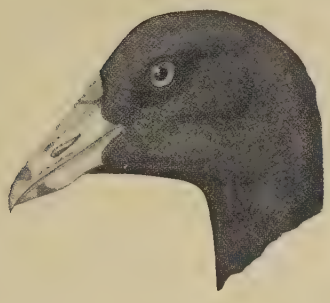


FIG. 77. COOT.

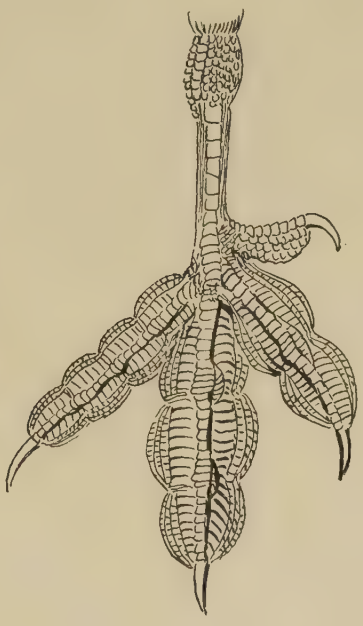


FIG. 78. FOOT OF COOT.

Remarks.—The Coot bears a general resemblance to the Florida Gallinule, but, aside from the differences in color, the scalloped feet of the Coot will always serve to distinguish it. (Chap., *Birds of E. N. A.*)

Range.—Breeds from southern Canada to New Jersey and California; winters from Virginia to Columbia.

Range in North Carolina.—Common in the coastal region in winter; occasional in the rest of the State during the migrations.

This is the "Blue Peter," so abundant as a winter visitor in our sounds and large lakes. During the spring and fall it is not uncommon to see one or more on small ponds about the State. Nearly every migration season specimens are brought to us for identification by persons who find them on the ground helpless after a stormy

night. Many persons are partial to the flesh of the Coot, and as it is a legal game-bird large numbers are shot annually. They are much better for the table if skinned instead of being plucked. Bald Eagles have an unquestionable fondness for Coots. Upon one occasion Pearson witnessed the successful efforts of an Eagle thus engaged. It was in Currituck Sound. A flock of Coots had hastily departed upon the approach of their great winged foe. One only remained upon the water; possibly it had been wing-shot and was unable to seek safety by flight. As the Eagle swooped the Coot dived, and the Eagle at once rose aloft. In a short time the Coot came up for air, and was instantly forced under water. This play was reënacted for many minutes, until the Coot, having become exhausted, fell a prey to its enemy.

When rising on the wing, Coots patter across the water for some distance, and the sound produced by a large flock that has been startled reminds one of the falling of hail or heavy raindrops on a resounding surface.

Because of the relative scarcity of ponds in the mountainous part of our State, Coots are of comparatively rare occurrence west of the Blue Ridge.

VIII. ORDER LIMICOLÆ. SHORE-BIRDS

Among the shore-birds are many species which are classed as game-birds on the statute books, and hence are more or less well known among gunners. Most of them breed in the far North, some well within the Arctic Circle, and their powers of flight are well exemplified by the known facts concerning their migration. An extreme instance of this is the well-authenticated flight of flocks of Golden Plover from Nova Scotia to northern South America. The longest known migration in this Order is that made by the White-rumped Sandpiper, which winters nine thousand miles to the southward of its summer nesting grounds.

Shore-birds are more abundant on the Atlantic coast during the fall migrations than in spring. This may be accounted for by the supposition that many return northward by way of the Mississippi Valley. The young are hatched with a downy covering and can run about actively soon after emerging from the shell.

"Many other curious facts concerning the migration of this group of long-distance travelers are known, although there is yet a great deal to be learned of the details of these long journeys. What impresses one most in the matter is the tremendous powers of flight and endurance that many of the species possess, powers, so far as we know, not excelled by any other birds. We do know that some of the gulls, albatrosses, man-o'war-birds, etc., are flyers of great endurance, but all of these are perfectly able to rest on the water at any time. Whether the Golden Plover, or any other of those that cross the longest stretches of watery waste, do this is a matter of conjecture of which we have no records. All the species of the group can swim, and some of them at least will not only swim but will dive and swim under water when wounded. This I have actually seen for myself. An ocean journey of twenty-five hundred miles without a rest seems almost incredible, as it would mean a sustained flight of fifty hours at a speed of fifty miles an hour, or thirty-six hours (two days and a night) at seventy-mile speed—a flight that one cannot imagine any bird making without food or rest.

"From among our galleries of mental pictures certain ones stand out like the works of old masters among a lot of gaudy chromos. Soft of tone and broad of treatment, none show up fairer or with a greater fullness of expression than do some of those of the wide expanse of salt-marsh—with the high yellow dunes in the background—the dark gray-browns of the exposed oyster-rocks among the smoother mud-flats, or the broad stretches of dazzling sand and sea-worn shells where the heat-waves shimmer mirage-like back into the unmeasurable distances. Above the soft lap of the summer wavelets on the drift-strewn shore-line come various familiar notes. The soft call of the Knot, the squeaking whistle of the Krieker, the twittering of the little 'Sea-chickens.' Then a soft flute-like whistle tells us that the Yellow-legs are flying, or a louder *pilly-will-willet* lets us know that Willets are not far away. This whistle of the Beetle-head, the low, plaintive call of the Ring-neck, or the *peep* of the Piping Plover, all add to the charm of the place that only the beach-rambler knows.

"Along the sandy, sea-lapped beaches, abroad on the wide, naked mud-flats, and peopling the bare and muddy rocks of 'coon' oysters, are hundreds and thousands of birds. With the exception of a few Fish Crows, Gulls and Boat-tailed Grackles, they are all 'beach' birds. From the big, conspicuous Oyster-catcher all the way down to the crowded hundreds of little, restless 'peeps', all are alive and active. For it is May, and the great northward migration is on. If you are after meat—and sport—you will build a blind and set out a dozen or more of flat profile decoys; but if the bag is with you a secondary consideration, a leisurely prowl along the sea line and the borders of the marsh will repay you better. The birds are restless; many of them are by no means shy, and there is a page or two of the great open book of Outdoors to be read. You have your field-glass with you (better leave the gun at home than it), and where the print is fine or the letters blur, use your glass.

"Over on the short grass of the salt-marsh an inconspicuous brownish object shows and disappears. On turning the glasses that way other patches of brown are seen, gradually assuming shape and proportion. 'Curlew's,' (Hudsonian, of course), you mutter, 'fifteen or twenty of them.' And right there you remember the gun in your hand and make a hike for the birds like the bloodthirsty hunter you really are. They rise out of shot, but a crouch behind a tussock of rushes, and a call or two, and they swing back—and a couple come down to the double discharge. While watching the remainder of the flock disappear in the distance, a compactly built bird comes with rapid and regular strokes of its pointed wings. You crouch again—and a 'Beetle-head' is added to the bag. Note the dense black of the underparts, in sharp contrast to the grays of the back and the light shades of the rest of the body.

"Along the edge of the marsh some medium-sized birds are feeding, along with the Peeps and Red-backs. They are long of leg and gray of body, and the glasses show them to be Yellow-legs, and you squat on a dry tussock and watch them.

"The beach here is only a few hundred yards wide, and back of and parallel with it runs a shallow, brackish creek-like and marshy sound, farther than the eye can reach, until it joins the waters of the sea at the inlet ten miles away. An ideal

place! Birds are passing back and forth all the time. The Ring-necked and Piping Plovers are about the sound-side, along with the peeps (Semipalmated and Least Sandpipers) and Red-backed Sandpipers. Black-bellied Plover come and go—once in awhile stopping to feed along with the smaller species. Here and there a turnstone or two shows large among the little 'Sea-chickens.' Greater and Lesser Yellow-legs are in and about the shallow pools of the marsh-borders, while over on the marsh itself some curlews are usually in evidence. Louisiana and Little Blue Heron dot the flat marshland, with a few Snowy and white-plumaged Little Blue Herons showing up conspicuously against the bright green of the salt-marsh grass. A Least Tern shrills overhead and a Laughing Gull cackles as he goes by. On the hot, dry sand-flats the Wilson's Plover run, and hide by standing still. A pair of Oyster-catchers are hard to drive from one wide, rolling expanse of yellow sand, where the worn and rounded shell-fragments show that the sea has some time in the past joined sound and ocean during a high tide and heavy southerly gale. They evidently have a nest near by, but a diligent search fails to discover it.

"As the sun drops low and the tide is again on the ebb the morning's experiences may be repeated; and when you seek the old camp at night to feed and rest the bodily man, you will feel that the spiritual and æsthetic sides of your *ego* have that day been bidden to a feast and have risen therefrom strengthened and refreshed."—H. H. BRIMLEY.

KEY TO FAMILIES

1. Toes lobate, or with distinct lateral membranes; tarsus extremely compressed. (Phalaropes.) *Phalaropodidæ.*
1. Toes not lobate, tarsus not specially compressed. See 2.
2. Tarsus more than twice middle toe with claw; naked part of tibia much longer than middle toe with claw. (Avocets and Stilts.) *Recurvirostridæ.*
2. Tarsus less than twice middle toe with claw; naked portion of tibia shorter than middle toe with claw. See 3.
3. Tarsus scutellate in front. See 4.
3. Tarsus reticulate in front. See 5.
4. Bill slender with a bluntish tip. (Snipes and Sandpipers.) *Scolopacidæ.*
4. Bill stout, hard, pointed, and wedge-shaped at tip. (Turnstones.) *Aphrizidæ.*
5. Bill not longer than tarsus, not compressed, contracted behind the horny tip, shaped somewhat like a pigeon's bill. (Plovers.) *Charadriidæ.*
5. Bill longer than tarsus, much compressed at tip. (Oyster-catchers.) *Hæmatopodidæ.*

18. FAMILY PHALAROPODIDÆ. PHALAROPES

KEY TO GENERA

A small family of three genera and as many species, all of which have been taken in our State.

1. Bill subulate, very slender. Membrane of toes scalloped. *Lobipes.*
1. Bill as above. Membrane of toes not scalloped. *Steganopus.*
1. Bill stoutish, flattened, with lancet-shaped tip. Membrane of toes scalloped. *Phalaropus.*

Genus Phalaropus (Briss.)

97. Phalaropus fulicarius (*Linn.*). RED PHALAROPE.

Toes webbed at base and with scalloped lobes terminally; bill heavy, wider than deep. *Ad.* ♀ *in summer.*—Crown and chin fuscous; cheeks white; back black, the feathers bordered with cream-buff; wings gray; some of the secondaries and tips of greater coverts white; upper

tail-coverts rufous; underparts dull, reddish brown, often with scattered white feathers. *Ad. ♂ in summer.*—Similar, but smaller, crown striped like back, little or no white in cheeks. *Juv.*—Similar to ads. in winter, but upperparts margined with buff, chest washed with buff. *Ads. and juv. in winter.*—Top of head and underparts white; region about eye and back of neck fuscous; back and scapulars dark pearl-gray; wings grayish fuscous, the coverts and secondaries tipped with white; rump and tail fuscous. L., 8.12; W., 5.37; B., .87; Tar., .82.

Remarks.—The juvenal plumage is worn until October or November. Molting spring birds are strikingly pied below. (Chap., *Birds of E. N. A.*)

Range.—Northern and southern oceans, breeding in Arctic regions, wintering far southward.

Range in North Carolina.—So far reported from the coastal region in February and April.

This bird is pelagic and may be looked for in the ocean off our coast in winter. It apparently does not come on the beaches unless driven in by unusual stress of weather. Our records of its occurrence in North Carolina are as follows:

Fig. 79. Red Phalarope.

On April 2, or 3, 1896, Gerald H. Thayer was shown by the keeper of Cape Lookout lighthouse about a dozen dead Red Phalaropes that had been killed by the light at night. Bishop writes: "Capt. N. E. Gould sent me twelve Red Phalaropes which were collected at Bodie Island, Dare County, six on April 8, and six on April 17, 1907." One was received in the flesh at the State Museum, Raleigh, on February 23, 1909, sent in by M. Leslie Davis of Beaufort.

Genus Lobipes (Cuv.)

98. Lobipes lobatus (*Linn.*). Northern Phalarope.

Description.—Adult dark plumbeous, variegated with tawny; rump and underparts white; neck mainly rufous; underparts white; immature and winter birds with more white than adults. L., 7.00 to 8.00; W., 4.00 to 4.50.

Range.—Nearly cosmopolitan (on the seas), breeding in Arctic regions and supposed to winter far to the south of the equator.
Range in North Carolina.—Reported from the coastal region, off shore.

C. J. Maynard, in *Birds of Eastern North America*, published in 1881, refers to seeing Northern Phalaropes along the coast of "the Carolinas," and says they are most common in the ocean just off Pamlico Sound. Their actual capture, however, appears not to have been effected until September 23, 1909, when H. H. Brimley found a company of five on White Lake in Bladen County and shot three of these. They were feeding on the water late in the evening of two consecutive days, and he was enabled to approach in a boat within fifteen yards of them. He describes them as most peculiar birds on the water, darting about on the surface more like insects than birds.

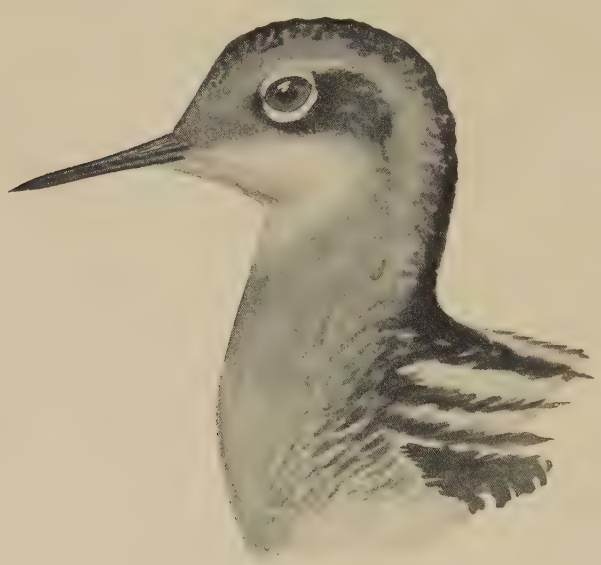


FIG. 80. NORTHERN PHALAROPE.

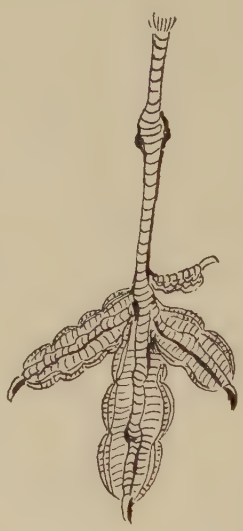


FIG. 81. FOOT OF NORTHERN PHALAROPE.

Genus Steganopus (Vieill.)

99. Steganopus tricolor (*Vieill.*). WILSON'S PHALAROPE.

Description: Ad. female in summer.—Top of the head and middle of the back pearl-gray, nape white; a black streak passes through eye to side of neck, and, changing to rufous-chestnut, continues down the sides of the back and on scapulars; neck and upper breast washed with pale, brownish rufous; rest of underparts and upper tail-coverts white. *Ad. male in summer.*—Upperparts fuscous-brown, bordered with grayish brown; upper tail-coverts, nape, and a line over the eye white or whitish; sides of the neck and breast washed with rufous; rest of the underparts white. *Ads. and juv. in winter.*—Upperparts gray, margined with white; upper tail-coverts white; wings fuscous, their coverts margined with buffy; underparts white. *Juv.*—"Top of head, back, and scapulars dusky blackish, the feathers distinctly bordered with buff; wing-coverts also bordered with pale buff or whitish; upper tail-coverts, superciliary stripe, and lowerparts white, the neck tinged with buff" (Ridgw.). Male, L., 8.75; W., 4.75; Tar., 1.20; B., 1.20. Female, L., 9.50; W., 5.25; Tar., 1.30; B., 1.30. (Chap., *Birds of E. N. A.*)

Range.—North and South America, breeding mainly north of the United States; winters in South America, south of the equator.
Range in North Carolina.—So far only taken in Currituck County.

A Wilson's Phalarope was collected on the beach opposite Knott's Island, Currituck County, by R. B. Lawrence, August 17, 1908. The specimen is preserved in the bird-collection of the American Museum of Natural History, New York City. One was taken by Jasper B. White on Currituck beach, opposite Church's Island, on August 25, 1910. The bird was identified by W. L. McAtee, of the United States Biological Survey. Another specimen was killed by Jasper B. White on Currituck Sound, September 13, 1911. (W. L. McAtee in letter, Oct. 14, 1911.) Frederick William Kobbe in *The Auk* for January, 1912, places on record the following: "Immature birds in winter plumage were shot near Currituck lighthouse, North Carolina, by Mr. Whitlock and Mr. Nourve on September 7, September 8 (two), and September 12, 1911. A well-marked female was taken by me September 14. This bird was so tame that it allowed me almost to touch it before it flew away in a zigzag manner. An old gunner at Currituck had never seen these birds before."

FIG. 82. WILSON'S PHALAROPE.

19. FAMILY RECURVIROSTRIDÆ. AVOCETS AND STILTS

A small family of birds allied to the sandpipers and snipes, but with the legs excessively long, and the bill very slender, long and acute.

There are only two American genera, each represented in North America by a single species, both of which have been taken rarely in our State.

KEY TO GENERA

1. Toes 4, the front ones full webbed; bill recurved, tapering to a fine point. *Recurvirostra.*
1. Toes 3, semipalmate; bill nearly straight. *Himantopus.*

Genus Recurvirostra (Linn.)

100. Recurvirostra americana (*Gmel.*). AVOCET.

Description.—Bill slender, recurved. *Ads. in summer.*—Head and neck cinnamon-rufous; back and tail white, scapulars and primaries black; middle coverts, tips of the greater ones, and part of the secondaries white; belly white, bill turned upward. *Ads. in winter and juv.*—Generally similar, but head and neck white or pearl-gray. L., 16.50; W., 9.00; Tar., 3.75; B. 3.75. (Chap., *Birds of E. N. A.*)

Range.—North America, rare east of the Mississippi, breeding from Northern Texas to the Canadian line, wintering from southern Texas to Central America.
Range in North Carolina.—Once observed near Beaufort.

"Avocets are common birds in parts of the interior of the United States, but are rare on the Atlantic coast. They frequent shores and shallow pools, and in searching for shells, crustacea, etc., their peculiar recurved bill is used in a most interesting manner. Dropping it beneath the surface of the water until its convexity touches the bottom, they move rapidly forward, and with every step swing their bill from side to side, as a mower does his scythe. In this way they secure food which the muddy water would prevent them from seeing." (Chap., *Birds of E. N. A.*)

FIG. 83. AVOCET.

A flock seen by Coues near Fort Macon, September 12, 1869, is our only record for North Carolina.

Genus Himantopus (Briss.)

101. Himantopus mexicanus (*Müll.*). BLACK-NECKED STILT.

Ad. ♂.—A white spot above and another below eye; front of head, front of neck, lower back, rump, and underparts white; tail grayish; rest of plumage glossy, greenish black. *Ad.* ♀.—Similar, but with back fuscous-brown, *Juv.*—Similar, but whole upperparts margined with rusty. L., 15.00; W., 9.00; Tar., 4.15; B., 2.00. (Chap., *Birds of E. N. A.*)
Range.—Breeds locally from central Oregon to Florida and the West Indies; winters from the Gulf Coast to Peru.
Range in North Carolina.—Once taken in Dare County, near the ocean beach.

A mounted Stilt is to be found in the museum at Trinity College, Durham, North Carolina. Rev. S. T. Moyle of Mount Gilead, who took the specimen, has written us as follows: "I think it was during June, 1900, I was shooting shore-birds on the beach south of Nag's Head, Dare County, when I saw this bird with a flock of Yellowlegs. I tried to secure it, but only crippled it. A friend who was with me then killed it and gave it to me." Bishop informs us that he saw a mounted specimen at Manteo, Roanoke Island, Dare County, in May 1902. It was in the possession of a minister, and he understood it had been shot in the spring of 1901 or 1902. Apparently both statements refer to the same bird, as the Trinity College specimen remained at Manteo for some years before being brought to Durham.

FIG. 84. BLACK-NECKED STILT.

20. FAMILY SCOLOPACIDÆ. SNIPES, SANDPIPERS, ETC.

These are the most familiar and numerous of our shore-birds, varying greatly in size and appearance, yet always retaining a more or less snipe-like appearance. The genera that occur in our State are numerous and may be distinguished by the aid of the following table:

KEY TO GENERA

1. Tarsus scutellate in front only. Bill very long, decurved. (Curlews.) *Numenius.*
1. Tarsus scutellate in front and behind. Bill not much decurved. See 2.
2. Eyes far back, directly above ears, tip of upper mandible thickened. Plumage unchanging. See 3.
2. Eyes not far back, considerably in front of ears. Tip of upper mandible thin. Summer and winter plumages different. See 4.
3. Tibiæ entirely feathered. Three outermost quills of wing much shorter and narrower than the others. *Philohela.*
3. Tibiæ naked below. None of the wing-quills notably different from the others. *Gallinago.*
4. Hind toe wanting. *Calidris.*
4. Hind toe present. See 5.
5. Toes not webbed at all, or with a single minute web. See 6.
5. Toes more or less webbed at base. See 9.
6. Bill shorter than middle toe with claw. Inner webs of wing-quills mottled. *Tryngites.*
6. Bill not shorter than middle toe with claw. Inner webs of wing-quills not mottled. See 7.
7. Wing 6 inches or more. Middle pair of tail-feathers not longer than the rest. *Tringa.*
7. Wing less than 6. Middle pair of tail-feathers longer and more pointed than the rest. See 8.
8. Bill scarcely longer than tarsus, and not half the length of tail. *Pisobia.*
8. Bill considerably longer than tarsus, and more than two-thirds the length of tail. *Pelidna.*
9. Tail graduated, more than half length of wing. *Bartramia.*
9. Tail little graduated, not more than half the length of wing. See 10.
10. Tail shorter than bill. Gape not reaching behind base of culmen. Tail barred or else chiefly black. See 11.
10. Tail longer than bill (from frontal feathers). Gape reaching beyond base of culmen. See 12.
11. Culmen smooth, not grooved. *Limosa.*
11. Culmen with a median groove. Tip of both mandibles wrinkled or pitted. *Macrorhamphus.*

12. Wing less than 4. Toes well webbed at base. Both mandibles grooved to the tip. Tail not barred. *Ereunetes.*
12. Wing not less than 4. See 13.
13. Exposed culmen less than one-fifth as long as the wing. *Machetes.*
13. Exposed culmen more than one-fifth as long as the wing. See 14.
14. Bill slightly broadened at tip, its upper surface slightly wrinkled or pitted. *Micropalama.*
14. Bill narrower at tip, its upper surface hard and smooth, not grooved to the tip. Tail barred. See 15.
15. Wing less than 4½. Tarsus about as long as middle toe and claw. *Actitis.*
15. Wing more than 4½. Tarsus rather longer than middle toe and claw. See 16.
16. Bill stout. Legs bluish. *Catoptrophorus.*
16. Bill slender. Legs not blusih. See 17.
17. Legs yellow. Tarsus more than one and one-half times middle toe without claw. *Totanus.*
17. Legs dusky. Tarsus much less than one and one-half times middle toe without claw. *Helodromas.*

Genus Philohela (Gray)

102. Philohela minor (*Gmel.*). WOODCOCK.

Ads.—Front of crown slaty, washed with buff, an indistinct blackish line in its center, and another from eye to bill; back of head black, with two or three bars of ochraceous-buff; rest of upperparts black, margined with slaty, and barred and mottled with rufous or ochraceous-buff; tip of tail ashy gray above, silvery beneath; underparts between ochraceous-buff and rufous; outer three primaries very narrow and much stiffened. L., 11.00; W., 5.40; Tar., 1.25; B., 2.90. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding from northern Florida to southern Canada, and wintering from southern New Jersey to southern Florida.

Range in North Carolina.—Whole State at all seasons, in damp, shady woods and low-ground thickets.

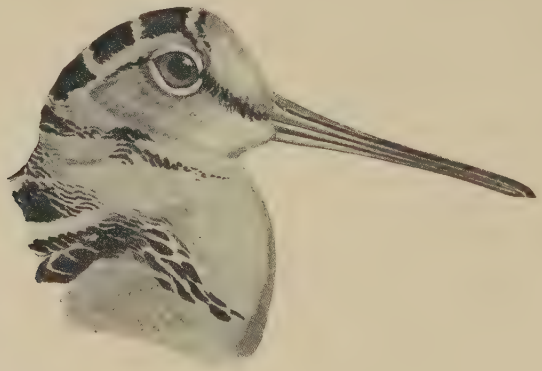


FIG. 85. WOODCOCK.

No bird so stirs the heart of the average sportsman as the Woodcock, and the rumor of its appearance in any place is sure to send one or more enthusiastic gunners to explore the neighborhood. To find this shy bird one must penetrate the woodland bogs and swamps, or occasionally standing corn near water. Rarely does it venture on the open flats so beloved by the Wilson's Snipe. When flushed its flight is usually short and comparatively weak, but the thick cover in which it is found often saves it from the hunter's aim. One may look for the Woodcock in suitable places throughout the State.

George B. Sennett in *The Auk* for July, 1887, speaks of finding one near the summit of Roan Mountain, and in the swamps of Tyrrell County. It is so abundant some years that market-hunters find it profitable to pursue it.

The Woodcock is a resident in North Carolina, but our native population is considerably augmented during the colder months by an influx of birds from farther north.

The nest is a slight depression on the ground among the fallen leaves, usually in a thicket of young trees. So closely do the colorings of the bird's plumage blend with the surroundings that one may pass within a few feet of a brooding bird without discovering its presence. Apparently Woodcocks are well aware of this, for they will often sit until almost trod upon before taking wing.

Their nests are often found in March, but our knowledge of the full extent of the nesting season is quite limited. On October 5, 1909, Pearson saw one in a swamp in Guilford County flutter along the ground as if accompanied by young.

The European Woodcock, *Scolopax rusticola* (Linn.), a considerably larger but very similar bird, has been found as a straggler from Newfoundland to Virginia. It may be distinguished by its size, and by the underparts being cross-banded with dark brown. L., 13.50; W., 8.00.

Genus Gallinago (Koch.)

103. Gallinago delicata (*Ord.*). Wilson's Snipe.

Ads.—Upperparts black, barred, bordered, and mottled with different shades of cream-buff; wings fuscous; outer edge of outer primary and tips of greater coverts white; throat white; neck and breast ochraceous-buff, indistinctly streaked with blackish; belly white, sides barred with black; under tail-coverts buffy, barred with black; outer tail-feathers barred with black and white, inner ones black, barred with rufous at their ends and tipped with whitish. L., 11.25; W., 5.00; Tar., 1.20; B., 2.50. (Chap., *Birds of E. N. A.*)

Range.—North America and northern South America, breeding from Pennsylvania northward, and wintering from North Carolina southward.

Range in North Carolina.—Common throughout the State during the migrations; it winters in the coastal region.

Fig. 86. Wilson's Snipe.

This, the best known and most widely distributed game-bird of the snipe and sandpiper family, occurs plentifully in suitable situations during the spring migrations, reaching its greatest abundance in March. Wet meadows, marshes, and burnt-over lowgrounds are its favorite haunts. Its distribution is very irregular, but all over the eastern half or two-thirds of the State it is likely to be found in suitable localities at any time from a warm spell in the latter part of February up to the last week in April. It is comparatively rare in the fall. In the eastern and south-

eastern parts of the State it is a more or less regular winter resident, the severity of the weather being the controlling factor.

As a game-bird it is most satisfactory to the true sportsman. Usually flushing quickly and unexpectedly, with a rapid, zigzag flight, the most experienced gunners find it a difficult mark. As the birds usually rise against the wind, it is a good plan to work the meadows and marshes down wind, so far as possible. An experienced retriever is a good adjunct in this kind of shooting, as a fallen bird is difficult to distinguish amid the marsh grass. It is very erratic in its occurrence, frequently being abundant in favorite localities one day and totally absent the next. This bird is often called "English Snipe" in North Carolina. "Jack Snipe" is another name sometimes heard.

Genus Macrorhamphus (T. Forst.)

This genus contains Sandpipers having the general appearance of snipe, but the eyes are not so far back. One species, with two subspecies, belongs to our list.

KEY TO SUBSPECIES

1. Length 11 or less, culmen averaging about 2¼. *Dowitcher.*
1. Length 11 or more, culmen averaging about 2¾. *Long-billed Dowitcher.*

104. Macrorhamphus griseus griseus (*Gmel.*). DOWITCHER: RED-BREASTED SNIPE.

Ads. in summer.—Upperparts, tertials, and wing-coverts black, the feathers edged or barred with ochraceous-buff or rufous; rump, upper tail-coverts, and tail barred with black and more or less ochraceous-buff; primaries fuscous; underparts dull, pale rufous, whitish on belly, more or less spotted and barred with black. *Ads. and Juv. in winter.*—Upperparts brownish gray; rump and tail barred with black and white; throat and breast washed with ashy, belly white, sides and under tail-coverts barred with black. *Juv.*—Upperparts black, the feathers edged with rufous; rump and tail barred with black and white, and sometimes washed with rufous; secondaries widely edged with white; underparts more or less washed wth ochraceous-buff and obscurely spotted with blackish. L., 10.50; W., 5.75; Tar., 1.30; B., 2.05-2.50.

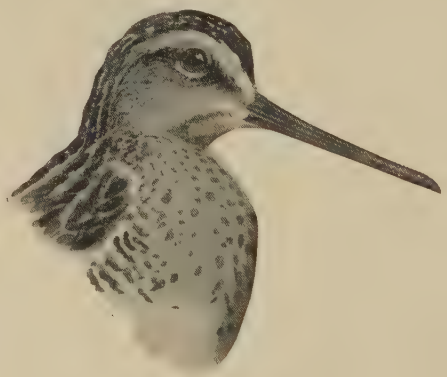


FIG. 87. DOWITCHER.

Remarks.—The barred tail and tail-coverts, with the peculiar flattened, pitted tip of the bill, are characteristic of this species. (Chap., *Birds of E. N. A.*)

Range.—Eastern North and South America. Breeding range unknown, but probably far northward; winters from Florida to Brazil.

Range in North Carolina.—Coastal region during the migrations.

The Dowitcher or "Grayback" is one of the best known of our shore-birds. Its migrations with us extend only along the tidal reaches of the coast. Inland, its occurrence is merely accidental. Feeding along the exposed mud flats left bare by the receding tide, on the open beach, or wading the shallow beach pools, this handsome snipe moves in flocks that bring joy to the heart of the beach gunner. The flight is strong, swift, and steady, and the bunches are usually so compact as to enable the shooter, if he so desires, to secure more than one to the shot. It comes well to decoys and answers readily to a call from the blind.

The height of its spring migration is in May and the birds coming south in the fall reach our coast in July. Some remain almost to the end of the year. One killed at Raleigh, July 29, 1884.

105. Macrorhamphus griseus scolopaceus (*Say.*) Long-billed Dowitcher.

Ads. in summer.—Similar to the preceding, but averaging larger; the bill especially is longer, the underparts are more uniformly rufous, and the sides are more heavily barred with black. *Ads. in winter and Juv.*—To be distinguished from the corresponding stages of *griseus* only by their larger size. W., 6.00; Tar., 1.50; B., 2.10-2.90. (Chap., *Birds of E. N. A.*)

Range.—Western North and South America, breeding far northward; winters from Florida southward to Mexico; occurs on the Atlantic coast during the migrations.

Range in North Carolina.—Coastal region during the migrations.

This is a bird of the middle and western states, but occurs regularly in the east in small numbers. The only North Carolina records available are from Beaufort (Atkinson), Pea Island (July, 1904, Bishop), and two specimens taken by Bruner at Beaufort, August 18 and 20, 1910.

Fig. 88. Stilt Sandpiper.

Genus Micropalama (Baird)

106. Micropalama himantopus (*Bonap.*). Stilt Sandpiper.

Ads. in summer.—Upperparts black, bordered with grayish and buffy; ear-coverts and an indistinct line around back of head rufous; secondaries grayish, edged with white; primaries fuscous; rump ashy; upper tail-coverts barred with black and white; outer tail-feathers with broken dusky bars, inner ones with central streaks or margins of brownish gray or white; underparts white, heavily barred with fuscous. *Ads. and Juv. in winter.*—Upperparts brownish gray; upper tail-coverts white; tail white, margined with brownish gray; underparts white;

throat, neck, and sides indistinctly streaked or washed with grayish. *Juv.*—Similar, but upperparts blackish, margined with ochraceous-buff. L., 8.25; W., 5.00; Tar., 1.60; B., 1.55. (Chap., *Birds of E. N. A.*)

Remarks.—The distinguishing characters of this species are the flattened, pitted tip of the bill, in connection with the very long legs.

Range.—Breeds in northern Canada, winters in South America.

Range in North Carolina.—Coastal region during the migrations.

Our first record for this bird in the State was made by Pearson, who took a specimen on May 19, 1898, at Cape Hatteras (*Auk*, Vol. XVI, p. 246). McAtee collected one on September 6, and four specimens on September 8, 1909, on Currituck Beach, about opposite Church's Island. McAtee also identified eight specimens taken July 29, and another on September 23, 1910, from the same locality, the latter nine being collected by J. B. White. We may regard it as one of our rarer sandpipers. Its movements, when feeding, are said to be slow for a sandpiper, and at times it will squat close to the ground in an effort to avoid detection.

Genus Tringa (Linn.)

107. Tringa canutus (*Linn.*). KNOT: ROBIN SNIPE.

Ads. in summer.—Upperparts barred and streaked with black and white and rufous; tail ashy gray, narrowly margined with whitish; underparts dull rufous; lower belly white or whitish, sides sometimes with black bars. (See *Auk*, X, 1893, p. 25.) *Ads. and Juv. in winter.*—Upperparts plain brownish gray; upper tail-coverts barred with black and white, tail brownish gray; breast and sides barred with black, belly white. *Juv.*—Upperparts pale brownish gray; head streaked with blackish; back, wing-coverts, and scapulars with distinct black and white borders; upper tail-coverts barred with blackish; tail ashy gray, narrowly margined with white; underparts white; breast finely streaked or spotted with blackish; flanks barred or streaked with blackish. L., 10.50; W., 6.75; Tar., 1.20; B., 1.30. (Chap., *Birds of E. N. A.*)

Range.—Nearly cosmopolitan, breeding far northward and wintering far southward.

Range in North Carolina.—Coastal region during the migration.

FIG. 89. KNOT.

The Knot is another well-known beach-bird, the shore-line of the ocean and sounds being its favorite feeding-ground. It occurs in greatest abundance in May. From July to September the returning flights from the north again enliven the muddy tide-flats. It decoys well and may often be found associated with other beach-loving species. It has been shot so incessantly that its numbers have been

much reduced in recent years. Many of the birds are said now to make a part of their southward flight over the ocean, a course which insures them protection from local gunners.

One species of the genus *Arquatella*, the Purple Sandpiper, *A. maritima maritima* (Brünn.), may occur with us as a straggler, as it winters as far south as Long Island, and has been known to wander to Georgia and Florida. Its generic characters would bring it under the second branch of 7 in the generic key, but it may be distinguished by having the tarsus shorter than the middle toe with claw. The species is about the size of a Pectoral Sandpiper.

Genus Pisobia (Billb.)

Three species of this genus visit us, and a fourth is also likely to be recorded in autumn.

KEY TO SPECIES

1. Wing less than 4.00. *Least Sandpiper.*
1. Wing more than 4.50. See 2.
2. Upper tail-coverts white, but sometimes streaked with dusky. *White-rumped Sandpiper.*
2. Upper tail-coverts not white. *Pectoral Sandpiper.*

108. Pisobia maculata (*Vieill.*). PECTORAL SANDPIPER.

Ads. in summer.—Upperparts black, all the feathers heavily bordered with pale ochraceous-buff; rump and upper tail-coverts black, lightly tipped with ochraceous-buff; middle tail-feathers longest, pointed and margined with buffy; outer tail-feathers brownish gray, narrowly margined with white; throat white, neck and breast heavily streaked with black and buffy; rest of underparts white. *Ads. and Juv. in winter.*—Similar, but ochraceous-buff of underparts replaced by rufous, and breast heavily washed with buffy. L., 9.00; W., 5.40; Tar., 1.10; B., 1.15. (Chap., *Birds of E. N. A.*)

Range.—Breeds in Arctic America; winters in South America.

Range in North Carolina.—Has been taken during the migrations at Raleigh and in the coastal region.

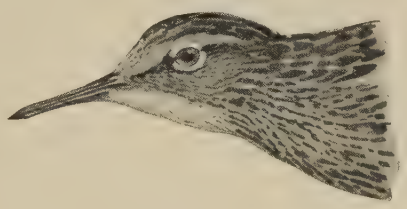


FIG. 90. PECTORAL SANDPIPER.

This sandpiper, which is much less strictly a salt-water bird than the two preceding, frequents wet meadows and marshes rather than mud-flats and beaches. It is a "flocking" bird, usually flying in compact bunches which may be raked by a gunner's fire in a most destructive manner. It also decoys readily.

With a more or less regular spring migration movement as far up the State as Raleigh, it may be looked for in wet meadows (preferring a little more water among the grass than Wilson's Snipe) almost anywhere within our borders where conditions suit its requirements.

The spring migration dates for this bird are late March and early April. In the fall it is much less common inland, and our few dates for this season of the year

show its presence in the State from August to November. It breeds in the far north and winters from the West Indies south.

This is a gamy little bird, and Jack Snipe shooting is not to be despised when nothing larger is to be had.

109. Pisobia fuscicollis (*Vieill.*). WHITE-RUMPED SANDPIPER.

Ads. in summer.—Upperparts black, edged with rufous; rump grayish fuscous, margined with ashy; longer upper tail-coverts *white*, with sometimes brownish-gray markings; central tail-feathers fuscous, outer ones brownish gray; upper throat white; neck, breast, and *sides* distinctly streaked and spotted with black and more or less washed with ochraceous-buff. *Ads. and Juv. in winter.*—"Upperparts plain brownish gray, with indistinct, narrow, mesial streaks of dusky; otherwise as in summer, but streaks on chest, etc., less distinct" (Ridgw.). *Juv.*—Similar to summer examples, but the feathers of the upperparts with *rounded* whitish or ochraceous-buff *tips;* breast less distinctly streaked. L., 7.50; W., 4.90; Tar., .90; B., .95.
Remarks.—The white upper tail-coverts distinguish this species. (Chap., *Birds of E. N. A.*)
Range.—Breeds in Arctic America; winters in southern South America.
Range in North Carolina.—Coastal region during the migrations, occasionally inland.

FIG. 91. WHITE-RUMPED SANDPIPER.

The White-rumped Sandpiper is one of the common beach-birds, usually moving in small flocks, and is found on fresh-water mud-flats as well as on the beaches and salt-water shore-bird haunts, though much more plentiful on the latter. Not at all exclusive, it is often found associated with others of like habits, and it is by no means shy. Though a swift, strong flyer, its custom when flushed is to make but a short flight before again dropping to the ground, where it at once resumes its search for the minute aquatic forms of animal life that go to make up its favorite food.

It has been taken twice in spring at Raleigh. Two females were collected from a flock of about twenty on Lake Ellis in June of 1910 by H. H. Brimley. In both specimens the ovaries showed considerable enlargement.

This sandpiper nests as far north as the Arctic Ocean and winters southward through South America to Patagonia. Its migration route is the longest known, the extreme nesting and wintering localities being nine thousand miles apart.

110. Pisobia minutilla (*Vieill.*). LEAST SANDPIPER.

Ads. in summer.—Upperparts black or fuscous, edged and tipped with buffy or rufous; rump and middle upper tail-coverts plain black or fuscous; central tail-feathers black or fuscous, outer ones ashy gray; upper throat white; neck and breast white or buffy, streaked with fuscous; belly and sides white. *Juv.*—Similar, but feathers of the back with *rounded* rufous or buffy tips;

breast not distinctly streaked. *Ads. and Juv. in winter.*—Upperparts brownish gray, sometimes with more or less black in the centers of the feathers; breast white or ashy, not distinctly streaked. L., 6.00; W., 3.50; Tar., .70; B., .75.

Remarks.—This is the smallest of our sandpipers, and can be confused only with *Ereunetes pusillus,* from which, however, it may always be distinguished by the absence of webs between the bases of the toes. (Chap., *Birds of E. N. A.*)

Range.—Breeds in Arctic America; winters from North Carolina to Brazil.

Range in North Carolina.—Transient throughout the State; common in the coastal region in migration, and also to some extent in winter.

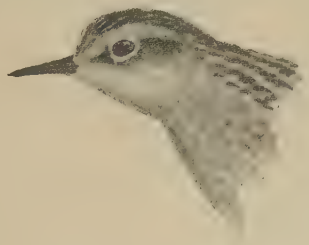


FIG. 92. LEAST SANDPIPER.

FIG. 93. FOOT OF LEAST SANDPIPER.

This is probably our most numerous sandpiper. Moving in compact flocks, both on the wing and when feeding, it is the joy of the pot hunter who counts his bag by numbers slain. Sometimes thirty to forty are killed at a single discharge of a shotgun. It is a trim, neat little inhabitant of the sea-beaches and mud-flats, both on the coast and inland. Usually it is found associated with that very similar bird, the Semipalmated Sandpiper.

During the migrations it is found, not infrequently, as far west as Raleigh, usually in May. On the coast it occurs in great numbers, and is often called "Sea Chicken," and "Peep."

Intermediate in size between this species and the preceding is Baird's Sandpiper, *Pisobia bairdi* (Coues), which breeds in the Arctic regions, and winters in southern South America. In the migrations it is common in the central portions of the United States, and occurs also irregularly on both coasts.

Genus Pelidna (Cuv.)

111. Pelidna alpina sakhalina (*Vieill.*). RED-BACKED SANDPIPER.

Ads. in summer.—Upperparts broadly margined with rufous, centers of the feathers black, wings brownish gray; breast whitish, lightly streaked with blackish; middle of belly with a large black patch, lower belly white. *Juv.*—Upperparts blackish, the feathers with rounded tips of rufous or buffy; breast washed with buffy and indistinctly streaked with blackish; belly spotted with black. *Ads. and Juv. in winter.*—Upperparts brownish gray; middle upper tail-coverts fuscous; wing-coverts brownish gray margined with buffy; throat white; breast ashy, indistinctly streaked; belly white, the sides sometimes spotted with black. L., 8.00; W., 4.75; Tar., 1.00; B., 1.50. (Chap., *Birds of E. N. A.*)

Remarks.—There is, of course, every degree of intergradation between summer and winter plumage, but the species may always be known by its slightly curved bill.

Range.—Breeds in Arctic America and Siberia; winters from New Jersey to Texas and in southeastern Asia.

Range in North Carolina.—Coastal region in winter.

The Red-backed Sandpiper is found on our coast throughout the year, with the exception of the time it is away on its northern nesting-grounds, from late May

until September. At Pea Island it winters in large flocks (Bishop), and it probably does this elsewhere along the whole of our coast-line. In the latter part of the spring migration many may be seen well advanced in their nuptial plumage, the black breast and red back combining to make a striking appearance. It is far from wild, and indeed it is usually much more easily approached than most of the members of this group. We have no record of its occurrence inland.

FIG. 94. RED-BACKED SANDPIPER.

Genus Ereunetes (Illig.)

Comprises two species of small sandpipers, resembling the Least Sandpiper in general appearance, but having evident webs between the front toes at their base. Both species occur on our coast.

KEY TO SPECIES

1. Chiefly grayish brown above. Bill shorter (culmen .75 or less in male, less than 1 inch in female). *Semipalmated Sandpiper.*
1. Chiefly rusty above. Bill longer (culmen more than .75 in male, 1 inch or more in female). *Western Sandpiper.*

112. Ereunetes pusillus (*Linn.*). SEMIPALMATED SANDPIPER.

Ads. in summer.—Upperparts black or fuscous, margined with brownish gray and a *small* amount of rufous; rump grayish brown; upper tail-coverts blackish; tail-feathers brownish gray, central ones darkest; breast streaked or spotted with blackish. *Juv.*—Similar, but upperparts and wing-coverts blackish, with rounded rufous or buffy tips to the feathers; breast unstreaked, tinted with buffy. *Ads. and Juv. in winter.*—Upperparts brownish gray, with darker shaft streaks; upper tail-coverts darker; underparts white, sometimes with faint streaks on the breast. L., 6.30; W., 3.75; Tar., .75; B., .65-.80.

Remarks.—The small size of this and the next species prevents their being confused with any other except *Pisobia minutilla*, from which they may always be known by their partially webbed toes. (Chap., *Birds of E. N. A.*)

Range.—Breeds far north; winters from Georgia to Patagonia.

Range in North Carolina.—Coastal region during the migrations; occasionally inland.

These birds are very numerous on the coast during the migrations and are generally found in company with Least Sandpipers. Daily collections of "sea-chickens" for a week, in the neighborhood of Southport, during May, 1909, showed a proportion of about one Semipalmated to ten Least Sandpipers, the two species being often indistinguishable until collected. On the Cape Hatteras beaches, in the

spring of 1898, Pearson found the flocks about equally divided. A specimen was taken at Raleigh on May 22, 1899.

Nearly everything said of the habits of the Least Sandpiper applies equally to this species while it is with us. May shows the height of its abundance in the spring, and from August to October in the fall. Like so many of this group, the Semipalmated breeds far toward the Arctic Circle.

FIG. 95. FOOT OF SEMIPALMATED SANDPIPER.

113. Ereunetes mauri (*Cab.*). WESTERN SANDPIPER.

This bird closely resembles the preceding, from which, in summer plumage, it differs in having the upperparts *conspicuously* margined with rufous and the breast more heavily streaked. In fall and winter plumage the differences in coloration are not so apparent, but the birds are to be distinguished at any season by the size of the bill, which in the western species is always longer. W., 3.80; Tar., .80; B., .85-1.20. (Chap., *Birds of E. N. A.*)

Range.—Breeds in western Arctic America; winters from North Carolina to Venezuela.

Range in North Carolina.—Coastal region during the migrations and in winter.

Bishop reports the Western Sandpiper as common in winter at Pea Island. Four specimens were taken by Bruner at Beaufort, August 28-30, 1909. These are the available records of its occurrence in this State. Cooke states that it is common in winter from North Carolina to Florida, and it is to be presumed, therefore, that the species may be found regularly along our coast from the fall to the spring migration.

Genus Calidris (Illig.)

114. Calidris leucophæa (*Pall.*). SANDERLING.

Ads. in summer.—Feathers of upperparts usually with black centers bordered and sometimes barred with pale rufous and tipped with ashy white; wings fuscous, basal half of outer web of inner primaries white; wing-coverts grayish fuscous, greater ones broadly tipped with white; tail brownish gray, narrowly margined with white; throat and upper breast washed with pale rufous and spotted with blackish; rest of the under parts pure white. *Juv.*—Similar, but upperparts without rufous, glossy black, the feathers sometimes bordered with white, but generally with two white spots at their tips separated by the black of the central part of the feather; nape grayish white, lightly streaked with blackish; underparts pure white, with occasionally a few spots on the breast. *Ads. and Juv. in winter.*—Upperparts pale brownish gray, wings as in the preceding; underparts pure white. L., 8.00; W., 5.00; Tar., 1.00; B., 1.00. (Chap., *Birds of E. N. A.*)

Remarks.—The Sanderling is the only one of our snipe or sandpipers having only three toes, and it may always be known by this character in combination with its transversely scaled tarsi.

Range.—Nearly cosmopolitan, breeding far northward; wintering from Virginia to Patagonia, in America.

Range in North Carolina.—Winters in the coastal region.

This is one of our winter beach-birds. Its noticeably light coloration makes it a comparatively easy bird to identify, particularly in winter when few other sandpipers are about. It comes in numbers in August and remains common until May, leaving perhaps a couple of months in midsummer when none are to be found.

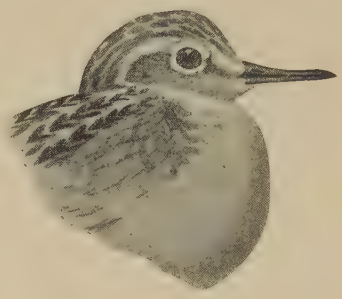


FIG. 96. SANDERLING.

A trim little bird is this; and it may often be seen running in close bunches along the foam-flecked sand to the very edge of the advancing waves. Its color harmonizes so well with the general tone of the beach that it presents a most inconspicuous object when not in motion. It is not at all rare during the time it is with us.

We have no record of its occurrence inland.

Genus Limosa (Briss.)

This genus comprises large sandpipers, with the bill slightly recurved; two species occur in eastern America, and both have been taken in North Carolina.

KEY TO SPECIES

1. Tail barred, without white. L., 16.00 to 20.00. *Marbled Godwit.*
1. Tail uniform black, with white base and tip. L., 14.00 to 16.75. *Hudsonian Godwit.*

115. Limosa fedoa (*Linn.*). MARBLED GODWIT.

Ads. in summer.—Upperparts black, the head and neck streaked with buffy, back barred or the feathers spotted on the sides and sometimes tipped with buffy or ochraceous-buff; inner web of outer primaries and both webs of inner ones ochraceous-buff or pale buffy, speckled with black; tail ochraceous-buff barred with black; throat white, rest of underparts pale buffy, spotted or barred with black; bill curved slightly upward, yellowish at the base, black at the end. *Juv.*—Similar, but underparts with few or no bars except on flanks and under tail-coverts. L., 18.00; W., 8.75; Tar., 2.75; B., 4.00. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding from North Dakota northward; winters from Florida to Central America.

Range in North Carolina.—Coastal region during the migrations, mainly in the fall, staying well on into the winter.

It would appear that the Marbled Godwit is rare today in North Carolina. Coues in his *Notes on the Natural History of Fort Macon* (Proc. Acad. Nat. Science, Phila., 1871, p. 32), says: "Abundant during the migrations, particularly in the fall. Possibly some may breed in the vicinity, but I am not sure of this. Some appear in August, many more in December, and they continue plentiful about the harbor till December."

Maynard found it common at Beaufort and southward, on November 17, 1876, Bishop reports it at Pea Island, July 11 to August 19, 1904, and also on May 20, 1901.

Besides these, we have only the record of Kobbe, which we quote in full from *The Auk*, January, 1912, page 108: "On September 12 (1911) two Marbled Godwits were shot by Mr. Whitlock and myself on Currituck. The female was smaller, measuring 17.00, and the male 19.25. The absence of bars on the underparts indicated that they were young birds."

116. Limosa hæmastica (*Linn.*). Hudsonian Godwit.

Ads. in summer.—Bill slightly curved upward. Upper tail-coverts black and white; tail black at the end, white at the base; above black, rusty and grayish; below reddish brown, barred with blackish and faintly tipped with white. *Juv.*—Similar, but below buffy whitish, breast grayer. *Ads. and Juv. in winter.*—Similar to the young below, but above brownish gray. L., 15; W., 8.2; Tar., 2.2; B., 3.2. (Chap., *Birds of E. N. A.*)

Range.—Both Americas, breeding far northward; wintering in southern South America.

Range in North Carolina.—Coastal region, apparently during the fall migration only.

Fig. 97. Hudsonian Godwit.

Our only record of this species is of one killed at Pea Island by J. B. Etheridge on September 13, 1911, and sent to the State Museum, where the skin is now preserved. There is much reason to believe that this is one of America's most rapidly disappearing birds. Another generation may see its extinction.

Genus Totanus (Bechst.)

KEY TO SPECIES

1. Length more than 12, wing over 7 inches. *Greater Yellow-legs.*
1. Length less than 11½, wing under 7. *Yellow-legs.*

117. Totanus melanoleucus (*Gmel.*). GREATER YELLOW-LEGS.

Ads. in summer.—Upperparts black, head and neck streaked and back spotted or barred with white or ashy; upper tail-coverts white, more or less barred with black; tail white or ashy, barred with black; breast heavily spotted with black; sides barred with black; middle of belly white. *Ads. and Juv. in winter.*—Similar, but upperparts brownish gray, edged with whitish; sides of scapulars, tertials, and wing-coverts with blackish and whitish spots; breast only lightly streaked with blackish, and sides slightly barred. L., 14.00; W., 7.70; Tar., 2.40; B., 2.20. (Chap., *Birds of E. N. A.*)

Range.—Breeds north of the United States; winters from Georgia to Patagonia.

Range in North Carolina.—Common in the coastal region during the periods of migration; also during the spring migration inland, but not common. Occasional in winter.

FIG. 98. GREATER YELLOW-LEGS.

To the sportsman the Greater Yellow-legs or "Yellow-shanks" is one of the best of the beach-birds. In habits it is not strictly maritime, being frequently found in abundance around shallow bodies of fresh water. Long of leg, it prefers clear water to mud, often seeking its food in water nearly up to the body line.

It is a graceful, not particularly active bird when on the ground, and its wading habits cause it to show slower movements when feeding than do the smaller related species. It is on the wing that it appears at its best. The long, slender neck, legs, and bill, the white underside and mottled black and gray upperparts, give it a trim, handsome appearance, and the long, powerful wings drive it down wind in a manner to call forth the gunner's greatest skill. The soft, clear whistle is characteristic, and imitation of it from the shooter's blind will often bring the bird within range.

Cairns records it from Buncombe County as a rare transient. At Raleigh it occurs irregularly from March 22 to May 29. It is a common bird of the coastal region during the migrations, reaching its greatest abundance in May. On May 15, 1911, the species was common on Lake Ellis. In the fall the southbound birds

begin to arrive as early as July and stay as late as October and November. It has been recorded from Beaufort and Pea Island in February, and doubtless a limited number spend the winter along our shores.

118. Totanus flavipes (*Gmel.*). Yellow-legs.

Ads. in summer.—Upperparts generally brownish gray, head and neck streaked with black and white; back, scapulars, and wing-coverts sometimes with black centers, spotted or tipped with whitish or brownish gray; upper tail-coverts white, more or less barred with black, tail varying from white to brownish gray, with numerous black or blackish cross-bars; breast heavily spotted or streaked, and sides barred with black; belly white, legs yellow. *Ads. and Juv. in winter.*—Similar, but upperparts brownish gray, the sides of the feathers with whitish spots; tail-bars grayish; breast lightly streaked with ashy. L., 10.75; W., 6.40; Tar., 2.05; B., 1.40. (Chap., *Birds of E. N. A.*)

Remarks.—This bird closely resembles the Greater Yellow-legs in color, but may always be distinguished by its smaller size.

Range.—Breeds north of the United States; winters in southern South America.

Range in North Carolina.—Coastal region during the migrations, also less commonly inland during the spring migration.

Fig. 99. Yellow-legs.

Almost all the remarks relating to the habits of the Greater Yellow-legs are applicable to this species. Generally speaking, it is simply a smaller form of the foregoing, with which it is often found associated. It is not, however, known to occur with us in winter.

"A smaller edition of the Greater Yellow-legs, this bird is one of our best known and widely distributed shore birds, occurring throughout North America, extending generally into South America as far as Patagonia. In the United States the Lesser Yellow-legs is a regular summer visitor to the marshes that line the Atlantic coast; arriving early in August, they are among the first of our shore birds to start the procession south. On the coast the salt-water marshes and meadows, where the grass is short, are their favorite haunts, and the clear note of a summer Yellow-legs is perhaps the first welcome sound in the early morning heard from the blind on the marsh. Soon the birds are in evidence, and, if within hearing distance, can usually be called up to the decoys; if permitted, they drop among the stool and gaze at the wooden snipe in blank surprise. After the first shot the flock often returns, and, if skillfully whistled, hovers over the wounded birds. The readiness with which they court destruction has resulted in their being driven from many of the old-time resorts, and this common, friendly bird may easily become rare. The young of the year migrate along the same course as the adults, but appear later, usually about the last week of August. For a short time after the first long flights the birds are in poor condition, but they soon fatten on their favorite feeding-grounds, and the dainty flavor of the flesh is highly esteemed. In the summer the Lesser Yellow-legs pass along through the United States, in the interior as well as along the coast. The return flight, however, in the spring is made by the shortest route to the breeding-grounds, the birds following along the Mississippi Valley and the larger adjacent water-courses, north into the fur countries. These are reached in June, and here they scatter through the smaller lakes and rivers of the Arctic regions, breeding on the shores and marshes. The eggs are laid on the ground with hardly the formality of a nest. At this

season the Yellow-legs, after the custom of many other of our shore birds, changes to a certain extent its ordinary habit, often perching on trees and bushes, if there are such in the vicinity of the nest. The note is varied and both sexes become very noisy, resenting with loud cries any approach near the nest. The young are hatched in July and rapidly attain the age of looking out for themselves, for by the end of the month the old birds leave them and gather in the first migratory flocks."—SANFORD, BISHOP, VAN DYKE, *The Water Fowl Family.*

Genus Helodromas (Kaup.)

119. Helodromas solitarius solitarius (*Wils.*). SOLITARY SANDPIPER.

Ads. in summer.—Upperparts olive-fuscous, with a slight greenish tinge, head and neck streaked and back spotted with white; upper tail-coverts fuscous, with fine whitish spots on their sides, lateral ones sometimes barred; central pair of tail-feathers fuscous, the others white, barred with black; breast streaked, and sides sometimes barred with black; belly white; axillars barred with black and white; legs greenish fuscous. *Ads. and Juv. in winter.*—Similar, but upperparts grayish brown; head and neck generally unstreaked, and back only lightly spotted with buffy white; breast streaked with brownish gray. L., 8.40; W., 5.25; Tar., 1.26; B., 1.15. (Chap., *Birds of E. N. A.*)

Range.—Summers from Pennsylvania northward; winters from the West Indies to southern South America. Breeding range unknown.

Range in North Carolina.—Whole State during the migrations; may summer in parts of the mountain region.

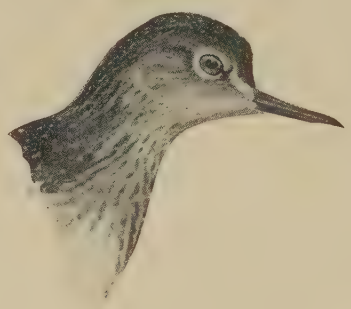


FIG. 100. SOLITARY SANDPIPER.

The Solitary Sandpiper is a bird of the woodland ponds, lakes, and streams, and not partial to the beaches and salt marshes. It occurs with us only during the migrations, and, as its name implies, is seldom found in companies. This and the Spotted Sandpiper are our two common inland sandpipers, and their habits are, to a certain extent, similar. The Solitary, however, shows a greater partiality to mud-banks than to the partly submerged logs and tiny patches of sand-beach much frequented by the Spotted Sandpiper.

At Raleigh it stays as late as the latter part of May, and the returning birds reach here by the middle of July. It is a common migrant throughout the State.

This bird lays its eggs in the disused nests of other birds situated in trees growing in swamps in Canada.

Genus Catoptrophorus (Bonap.)

One species of this genus occurs with us, represented by two subspecies.

KEY TO SUBSPECIES

1. Colors darker; bill shorter, usually less than 2.25. *Willet.*
1. Colors paler; bill longer, usually more than 2.25. *Western Willet.*

120. Catoptrophorus semipalmatus semipalmatus (*Gmel.*). WILLET.

Ads. in summer.—Upperparts brownish gray, the head and neck streaked, and the back barred with black, and sometimes buffy, the centers of the feathers being occasionally wholly black; basal half of primaries and greater part of secondaries white; upper tail-coverts white with a few blackish bars; central tail-feathers ashy, indistinctly *barred with blackish;* outer ones whitish, lightly mottled with grayish; foreneck heavily streaked; breast and sides heavily barred with dark brownish gray and more or less washed with buffy; belly generally white, with sometimes a few bars. *Ads. and Juv. in winter.*—Upperparts brownish gray, unmarked; tail gray, without bars; rump and wings as in the adult; breast washed with grayish; belly white; *axillars black.* L., 15.00; W., 8.00; Tar., 2.30; B., 2.15. (Chap., *Birds of E. N. A.*)

Range.—Breeds from Virginia southward; winters from Bahamas to Peru.

Range in North Carolina.—Coastal region in summer, breeding.

One of the few species of the sandpiper group which spend the summer with us. We have never seen it on fresh-water marshes, although it is said at times to frequent them. A few years ago it was abundant in summer on the North River marshes, near Beaufort, and quite common in Core Sound during the early fall. Owing to the destruction of both birds and eggs during the breeding season, it has become much scarcer during the past few years, and will soon become one of the rarer of the shore-birds unless better protective measures are adopted.

FIG. 101. WILLET.

Wet salt-marshes and mud-flats are its favorite haunts, particularly the former. The nest is usually placed on the dry salt-marsh and is built of the grasses found near by. It is also found nesting among the sand dunes. The eggs are four in number, and May is the principal nesting month. The eggs were formerly gathered by the coast-dwellers and used as an article of diet. Pearson found their nests in Carteret and Brunswick counties in May and June, 1898, and in Onslow and New Hanover counties in May, 1903.

121. Catoptrophorus semipalmatus inornatus (*Brewst.*). WESTERN WILLET.

Slightly larger than the preceding, and, in summer plumage, upperparts paler and less heavily marked with black; breast less heavily streaked and more suffused with buffy, middle tail-feathers without black bars. In winter plumage the two forms can be distinguished only by the slight and inconstant character of size. W., 8.50; Tar., 2.50; B., 2.40. (Chap., *Birds of E. N. A.*)

Range.—Western United States and Canada, wintering from Florida to Mexico.

Range in North Carolina.—Fall migrant on Pea Island.

Bishop reports that this subspecies was a common migrant at Pea Island, Dare County, from July 12 to August 10, 1904. It doubtless occurs regularly on our coast.

Genus Machetes (Cuv.)

122. Machetes pugnax (*Linn.*). RUFF.

Ad. ♂ in summer.—Very variable; above and below black with purplish reflections; or rusty barred with purplish, etc.; feathers of breast much lengthened to form a shield of rusty, black, or black-and-white feathers; two variously colored tufts on the hind-neck. *Ad. ♂ in winter.*—Above grayish brown; below white; throat and breast grayish; end of tail with remains of blackish bars; ruff absent. *Ad. ♀.*—Head, neck and underparts as in winter male; back black, margined with grayish brown; inner wing-feathers *barred* with black and grayish brown. L., 12.50; W., 7.00; Tar., 1.70; B., 1.50. (Chap., *Birds of E. N. A.*)

Range.—Eastern Hemisphere, straggling now and then to the American coast.

Range in North Carolina.—Once taken at Raleigh.

FIG. 102. RUFF. (Female or Immature Male.)

One female of this European species was taken on Walnut Creek, near Raleigh, by H. H. Brimley, on May 6, 1892. It was, of course, an isolated straggler, and a similar capture is not very likely to occur in the future.

Genus Bartramia (Less.)

123. Bartramia longicauda (*Bechst.*). UPLAND PLOVER: BARTRAMIAN SANDPIPER.

Ads.—Head and neck streaked with black and ochraceous-buff; back and wing-coverts ochraceous-buff, barred with black; tertials olive, barred with black and margined with ochraceous-buff; primaries fuscous, the outer one *barred with white;* inner tail-feathers brownish gray, outer ones varying from ochraceous-buff to white, all more or less barred with black; breast and sides washed with buffy and streaked or barred with black; belly white or whitish. *Juv.*—Similar, but the ochraceous-buff is deeper. L., 11.50; W., 6.50; Tar., 1.90; B., 1.15.

Remarks.—The white bars on the outer primary will always serve to identify this species. (Chap., *Birds of E. N. A.*)

Range.—Breeds from northern Virginia northward; winters in southern South America.

Range in North Carolina.—Inland portions of the State during the migrations; neither common nor regular in its occurrence.

The Upland Plover or Bartramian Sandpiper is a bird of the central States, rather than of the Atlantic slope. It occurs, however, more or less regularly through central North Carolina, and may be regarded as an irregular spring migrant. The dry, rolling upland constitutes its favorite haunts with us, and the species may be looked for generally in April. Its brownish coloration makes it a

very inconspicuous bird on the ground, and it is too shy to be approached on foot with any degree of success. The birds are at times so fat that the skin of the breast will burst when falling to earth before the gun.

The notes of the bird are very penetrating and far-reaching, and it is much oftener heard than seen. The negroes give the names of "Wild Mare" and "Flying Colt" to this bird, from the fancied "whinnying" notes that may be clearly heard falling from aloft, often with no bird in view. It is regarded with some degree of superstition on this account.

Fig. 103. Upland Plover.

Pearson found no less than six Upland Plovers scattered through the open pine woods of Brunswick County in June, 1898. This, together with one record from Buncombe County, one from Guilford College (1893), and several from the neighborhood of Raleigh, are all the definite records we have of its occurrence in the State. It may possibly be found to breed sparingly.

"Upland Plover are no longer found abundant anywhere excepting in the West and South.

"They have vanished entirely from many of the Eastern fields, but are still fairly abundant in Illinois, the Dakotas, and Indian Territory. Mr. Hough says this bird fairly swarms at times on the lower table-lands of Utah and Colorado and overruns Kansas and Nebraska in large flocks; but they do not decoy regularly enough to warrant the use of decoys, and the shooter need not waste time in putting out a flock. In a few instances he shot them over decoys made of dead birds, but could hardly say that they drew in to the flock, nor is it certain that they will pay more than the slightest attention to an imitation of their whistle. They are especially fond of ground that has recently been burnt over.

"Before becoming familiar with the gun, these birds, like all others, are quite tame. Coues says he found them so tame in Kansas that they were destroyed without the slightest artifice, and that he had seen them just escape being caught with the crack of a coach-whip. Van Dyke, in a magazine article, has given us an interesting account of shooting these birds in standing corn. He killed seventeen birds in one field, many of the shots being within twenty-five feet, and made one double shot. This is the only instance I know of where the birds have been walked up and shot at close range. I should have been tempted to buy the field. I doubt if they are to be found anywhere today as tame as described by Coues. They learn quickly that man is their enemy, and the fear becomes, I believe, a matter of instinctive heredity." Huntington's *Our Feathered Game.*

Genus Tryngites (Cab.)

124. Tryngites subruficollis (*Vieill.*). Buff-breasted Sandpiper.

Description.—Upper parts dull grayish buff or brownish, varied with blackish; underparts buff, streaked or speckled on chest with dusky; under primary coverts and inner webs of quills beautifully mottled with dusky on a whitish ground. L., 7.00 to 9.00; W., 5.00 to 5.50.

Range.—North America, mainly in the interior, breeding far northward, south in winter to southern South America.

Range in North Carolina.—So far, only taken on Currituck beach in the fall.

This species finds a place in our list on the authority of F. W. Kobbe, of New York City, who, in *The Auk* for January, 1912, page 108, records the capture of three specimens by Whitlock, on September 12, 1911. Kobbe himself saw a flock of six, two days later. He says the species appeared to be unknown to the local gunners.

"This is a rare species on the Atlantic Coast. Dr. Hatch writes of it as observed by him in Minnesota: 'They are an extremely active species when on the wing, and essentially ploverine in all respects, seeking sandy, barren prairies, where they live upon grasshoppers, crickets, and insects generally, and ants and their eggs specially. I have found them repasting upon minute mollusks on the sandy shores of small and shallow ponds, where they were apparently little more suspicious than the Solitary Sandpipers are notably. The flight is in rather compact form, dipping and rising alternately, and with a disposition to return again to the neighborhood of their former feeding-places.'"—Chapman's *Birds of Eastern North America.*

Genus Actitis (Illig.)

125. Actitis macularia (*Linn.*). SPOTTED SANDPIPER.

Ads. in summer.—Upperparts brownish gray with a faint greenish luster, head and neck more or less streaked, and back barred or spotted with black; inner tail-feathers like back, outer ones white with blackish bars; underparts white; everywhere spotted with black. *Juv.*—Upperparts brownish gray, with a greenish tinge, back faintly and wing-coverts conspicuously barred with black and buffy; underparts pure white, unspotted, but slightly washed with grayish on breast. *Ads. and Juv. in winter.*—Similar, but back without bars. L., 7.50; W., 4.20; Tar., 90; B., .95. (Chap., *Birds of E. N. A.*)

Range.—Both Americas, breeding from South Carolina to Alaska, and wintering from South Carolina to Brazil.

Range in North Carolina.—Whole State, common during migrations, and occurring also in summer, though less commonly.

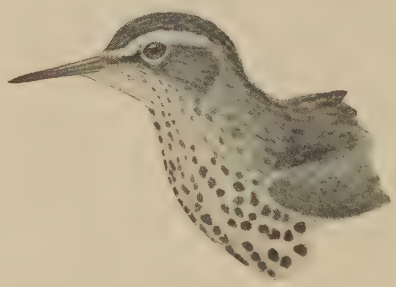


FIG. 104. SPOTTED SANDPIPER.

This is our most common inland sandpiper. It is found wherever conditions are suitable. Around mud-puddles, small branches, creeks, lakes, ponds, rivers—anywhere and everywhere that a little water accumulates and a log or patch of mud or gravel gives it a resting and feeding place, this species may be found. One may travel along the course of almost any stream or lake shore in the State and seldom be out of sight of one or more of these birds during the spring and fall migrations. It is in fact the most widely distributed and characteristic bird of our water-courses. It is a summer resident to some extent, and possibly nests with us, though we have no record of its eggs having been taken in North Carolina.

It seems to be most common in May, and it occurs from Cape Hatteras to the Blue Ridge Mountains and beyond. The nest is placed on the ground. It is simply a depression in the soil, lined sometimes with grass or moss, and is situated usually near water. The eggs commonly number four; have a creamy, buff, or clay-colored ground, blotched, spotted, and dotted with blackish brown; and measure about 1.34 x .92.

Genus Numenius (Briss.)

KEY TO SPECIES

1. Secondaries, quills, etc., rusty cinnamon. L., 20.00 or more. *Long-billed Curlew.*
1. Secondaries, quills, etc., dull brownish. L., 16.00 to 18.00. *Hudsonian Curlew.*

A third species, the Eskimo Curlew. *Numenius borealis* (J. R. Forst); doubtless formerly occurred. It is a still smaller bird than the Hudsonian Curlew (L., 12.50 to 14.50), and further differs from it in having no paler median stripe on the crown. It is now considered to be nearly or quite extinct.

126. Numenius americanus (*Wils.*). Long-billed Curlew.

Ads.—Head and neck streaked, and back barred with buffy and black; wing-coverts, inner webs of primaries, secondaries, and tail varying from buffy to pale rufous, barred or mottled with blackish; underparts ochraceous-buff, breast more or less streaked and sides sometimes barred with black; axillars rufous, generally unbarred. L., 24.00; W., 10.50; Tar., 3.10; B., 6.00. (Chap., *Birds of E. N. A.*)

Range.—North America, now only a straggler east of the Mississippi; winters from South Carolina to Central America.

Range in North Carolina.—Not well known.

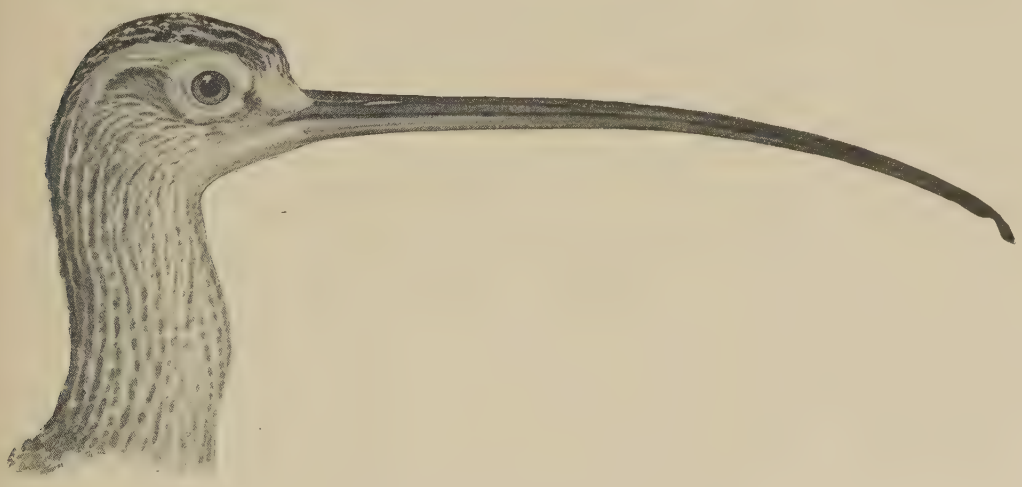


Fig. 105. Long-billed Curlew.

Formerly abundant on our coasts (Coues, 1871), its status with us today is hard to define, except that it is a very rare bird, if found at all within our borders. We know of no later unquestioned record than that of a specimen killed on Shackleford Banks, near Beaufort, in 1885, by "Tobe" Lane of New Bern.

It is a bird of striking appearance and large size, but owing to excessive shooting it is now virtually extinct on the Atlantic Coast. Coues states that it was a resident near Beaufort in 1871.

127. Numenius hudsonicus (*Lath.*). HUDSONIAN CURLEW.

Ads.—Upperparts grayish brown, the sides of the feathers with buff or whitish spots; rump and tail barred with buffy and blackish; inner web of outer primaries and both webs of inner ones *barred with buffy or whitish and black*; underparts buffy or whitish; neck and breast streaked and sides and under wing-coverts barred with black. L., 17.00; W., 9.50; Tar., 2.20; B., 3.75.

Remarks.—Young birds often have the bill as short as in *borealis* from which, however, they may always be distinguished by their barred primaries. (Chap., *Birds of E. N. A.*)

Range.—Both Americas, breeding far northerly, and wintering from northern Mexico to southern Chile.

Range in North Carolina.—Coastal region during the migrations.

The Hudsonian Curlew is our second largest shore-bird, now that the preceding species is no longer with us. Its flight is strong and regular, not unlike that of some ducks, and it is wild enough to make the gunner experience some thrills of satisfaction when he draws a specimen or two from his game bag at the close of a day's beach shooting. In flight the neck is folded back, and the appearance of the bird on the wing is generally that of compact strength and size, the long, curving bill identifying it as a Curlew without fail.

Bishop reports it from Pea Island as a rather rare migrant. Pearson and H. H. Brimley observed this species on the mud-flats and marshes near Southport in August of 1909. May 7–11, 1910, we found fifteen to twenty daily on the salt marshes between Cape Fear and Lockwood's Folly. On April 29, 1911, a flock of between twenty and thirty was seen flying over Orton Pond (Brunswick County), heading towards the coast west of Southport. Both Pearson and H. H. Brimley have found the bird more or less common on the North River marshes in Carteret County, and at Wrightsville Sound near Wilmington. A pair was seen flying south over New River Inlet by H. H. Brimley on August 4, 1918.

21. FAMILY CHARADRIIDÆ. PLOVERS

The plovers are shore-birds with larger and rounder heads than the snipe and sandpipers. The bill also is usually shorter than in those birds, and is shaped somewhat like that of a pigeon. The wings are very long and pointed, and the hind toe is usually absent, just the reverse of the case in the preceding family, in which a hind toe is usually present.

KEY TO GENERA

1. Plumage of upperparts speckled. See 2.
1. Plumage of upperparts not speckled. Neck with dark rings. See 3.
2. Hind toe present, but very small. *Squatarola.*
2. Hind toe wholly absent. *Charadrius.*
3. Tail one-half or more length of wing, rump orange brown, unlike back, breast with two black rings. *Oxyechus.*
3. Tail not one-half length of wing, rump same color as back, breast with not more than one black band. See 4.
4. Bill as long as middle toe with claw. *Ochthodromus.*
4. Bill shorter than middle toe with claw. *Ægialitis.*

HUDSONIAN CURLEW. **Numenius hudsonicus** (Lath.)

Genus Squatarola (Cuv.)

128. Squatarola squatarola (*Linn.*). BLACK-BELLIED PLOVER.

Ads. in summer.—Upperparts black, bordered with white; tail white, barred with black; basal half of inner web of primaries white; sides of head and neck and entire underparts, except white lower belly and under tail-coverts, black. *Juv.*—Upperparts black, head and neck streaked, back spotted with whitish or buffy yellow; tail and wings as in adult; underparts white, breast and sides streaked with brownish gray. *Ads. and Juv. in winter.*—Similar to the preceding, but upperparts brownish gray, lightly margined with whitish. L., 11.00; W., 7.50; Tar., 1.90; B., 1.10.

Remarks.—The rounded scales on the front of the tarsus and the presence of a fourth, although very small, toe distinguish this bird. (Chap., *Birds of E. N. A.*)

Range.—Nearly cosmopolitan. Breeds in the Arctic regions and on the Atlantic Coast of America; winters from North Carolina to Brazil.

Range in North Carolina.—Coastal region from late July to the end of May.

FIG. 106. BLACK-BELLIED PLOVER.

FIG. 107. FOOT OF BLACK-BELLIED PLOVER.

This fine bird is found along our coast throughout the year, except possibly from about the end of May to the latter part of July. A few immature birds probably pass the summer on the coast. It is, however, most plentiful during the migrations.

The Black-bellied Plover is an alert, shy bird, and does not decoy with as much unconcern as do many other beach-birds. Its large size and swift flight make it a favorite among gunners.

With us it is a bird of the tide-flats and beaches, and not found inland. Usually congregated in small bunches, it follows the receding tide to feast on small marine life. In moving from place to place the flocks are often compact, or in lines, and the flight is strong and regular.

Genus Charadrius (Linn.)

129. Charadrius dominicus dominicus (*Müll.*). GOLDEN PLOVER.

Ads. in summer.—Upperparts black, spotted and margined with golden yellow; tail brownish gray, indistinctly barred; forehead, sides of head, neck, and breast white; rest of the underparts, including cheeks, black; under wing-coverts ashy. *Juv.*—Upperparts and tail fuscous, spotted or barred with whitish or yellow; underparts whitish, more or less streaked or barred with brownish gray. *Ads. and Juv. in winter.*—Similar, but less streaked below and less spotted above. L., 10.50; W., 7.00; Tar., 1.60; B., .90.

Remarks.—Immature birds are sometimes confused with those of the Black-bellied Plover, but, aside from differences of size and color, the absence of the fourth toe in the present species will always distinguish it. (Chap., *Birds of E. N. A.*)

Range.—Breeds in the Arctic regions; winters in southern South America.

Range in North Carolina.—Rare migrant, chiefly in fall.

FIG. 108. GOLDEN PLOVER.

FIG. 109. FOOT OF GOLDEN PLOVER.

A very rare bird with us. In 1871 Coues reported it as a common migrant in October, at Fort Macon. Cairns recorded it as a rare migrant in Buncombe County fifteen years ago, and one was taken at Raleigh, by W. S. Primrose, in 1884.

McAtee took specimens on September 7 and 23, 1909, and on April 18 and August 30, 1910, on Currituck beach, opposite Church's Island.

"Most birds appear to return to their summer homes over much the same route by which they left them. There are, however, a few marked exceptions to this rule. Among our land-birds, the Connecticut Warbler enters the United States through Florida and journeys thence northwestward along the Alleghanies, and west to Missouri, to the Upper Mississippi Valley and Manitoba. At this season it is unknown on the Atlantic coast north of Florida, but during its return migration, in September and October, it is often not uncommon from Massachusetts southward, and, at this season, is rare or unknown in the Mississippi Valley south of Chicago. (See Cooke, '04.)

"Among our water-birds, cases of this kind are more frequent. The fall migration often brings to the Atlantic Coast species which are rarely if ever seen there in the spring. The Black Tern, for example, occurs near New York City in numbers, from August to October, but is not found there in the spring.

"The Golden Plover, as has been shown by Cooke ('93), after breeding in June on the shores of the Arctic Ocean, in August migrates southeastward to Labrador, where it feeds on the crowberry (*Empetrum*), laying on a supply of fat as fuel for the remarkable voyage which follows. From Labrador the birds fly south to Nova Scotia and thence lay their course for northern South America in a direct line across the Atlantic.

"Under favorable conditions they may pass the Bermudas without stopping, but should they encounter storms they rest in these islands and are also driven to our coast. Their first stop may be made in the Lesser Antilles, through or over which they proceed to South America, en route to their winter quarters in southwestern Brazil and the La Plata region.

"In returning to their Arctic home these Plover pass northward through Central America and the Mississippi Valley, the main line of their fall and spring routes, therefore, being separated by as much as 1,500 miles.

"The explanations advanced to account for the gradual development of migration routes, over which birds in the fall retrace the path followed in the spring, are inadequate to account for the origin of these phenomenal journeys, on which the pioneer voyagers must apparently have embarked unguided by either inherited or acquired experience. Nor do we understand how birds have learned to cross regularly over bodies of water, hundreds or even thousands of miles in width.

"European birds cross the Mediterranean, to and from Africa, at a point where soundings indicate that a much closer land relation formerly existed; but the 400-mile flight from Jamaica to northern South America, the 600-mile flight from the nearest land to the Bermudas, or the journey regularly made by the Turnstone and Golden Plover to Hawaii, 2,000 miles from the nearest land, are evidently not to be explained in this way." (Chap., *Birds of E. N. A.*)

Genus Oxyechus (Reichenb.)

130. Oxyechus vociferus vociferus (*Linn.*). KILLDEER.

Ads.—Forehead, a spot behind the eye, throat, and a ring around neck, a band on breast, lower breast, and belly white; front of crown, lores, a ring around neck, and a band on breast black; crown and back grayish-brown tipped with rufous; rump and upper tail-coverts rufous; inner tail-feathers grayish-brown, outer ones becoming rufous and white, all tipped with black and white. L., 10.50; W., 6.50; Tar., 1.35; B., .75. (Chap., *Birds of E. N. A.*)

Range.—Breeds from Mexico to Canada; winters from New Jersey to Peru.

Range in North Carolina.—Whole State, occurring more or less at all seasons, but most abundant during the migrations.

FIG. 110. KILLDEER.

The Killdeer is found throughout the State except, perhaps, in the higher mountains. It frequents the uplands, as well as the lake shores. In the central part of the State, although breeding commonly, it is more plentiful during the migrations. They are active and noisy birds, and if any are in the neighborhood one usually knows of it. They may often be heard calling at night as they fly about the fields. On the ground they are usually restless and run swiftly on the approach of danger. Except in the mating season the bird is more often found in flocks, the bunches usually having a much more compact formation in flight than when feeding.

The eggs are large for the size of the bird, pointed, and usually four in number. In the nest they lie with their points together in the center. They are deposited in April, May, and June. The nest is a very slight affair, not much more than a shallow hollow, often scratched among the cotton rows, or in pebbly ground in the neighborhood of millponds. Its plaintive cry of *kil-dee, kil-dee,* which may be heard in all parts of the State, is a well-known sound to every North Carolina farm boy.

Genus Ægialitis (Boie)

KEY TO SPECIES

1. Black bands broad. Toes distinctly webbed at base. *Semipalmated Plover.*
1. Black bands narrow and pale, that on breast interrupted. No web between inner and middle toe. *Piping Plover.*

131. Ægialitis semipalmata (*Bonap.*). SEMIPALMATED PLOVER.

Ads. in summer.—Feathers at base of upper mandible, front of crown, sides of head below eye, and a band on breast, which generally encircles the neck all around, black; rest of underparts and a ring around the neck white; back of head and back brownish gray; inner tail-feathers brownish gray, outer ones becoming gradually white; toes webbed at the base. *Winter plumage.*—Similar, but black replaced by brownish gray. L., 6.75; W., 4.80; Tar., .90; B., .50. (Chap., *Birds of E. N. A.*)

Range.—Both Americas, breeding from the Gulf of St. Lawrence northward, and wintering from South Carolina to Patagonia.

Range in North Carolina.—Coastal region during the migrations, occasionally inland.

FIG. 111. SEMIPALMATED PLOVER.

This bird is frequently called Ringneck. It is a common migrant on the coast. Though chiefly maritime with us, three specimens have been taken at Raleigh (C. S. Brimley), two in 1884 and one in 1909, both in May.

The Semipalmated Plover usually goes in small flocks, and feeds on the mud-flats, marshes, and sea-beaches. It is a neat, graceful little plover, of quick movements, both on the ground and in flight. It is frequently found in company with flocks of other small shore-birds, known collectively as "peeps."

132. Ægialitis meloda (*Ord.*). PIPING PLOVER.

Ads. in summer.—Upperparts pale whitish ashy; forehead, underparts, and a ring around the neck white; front of the crown and a band on either side of the breast, sometimes complete, black; inner tail-feathers fuscous, outer ones becoming white. *Winter plumage.*—Similar, but black replaced by brownish gray. L., 7.00; W., 4.75; Tar., .85; B., .50. (Chap., *Birds of E. N. A.*)

Range.—Breeds from North Carolina northward; winters from Georgia southward to northern Mexico.

Range in North Carolina.—Coastal region during the migrations, also detected breeding on Pea Island by Bishop.

This is another of the little plovers that frequent the beaches in numbers during the migrations. In habits it very much resembles the foregoing, but in appearance it is noticeably different. Its general coloration renders it most inconspicuous on the shell-strewn stretches of sand it inhabits. The note of this bird is particularly musical and striking.

Bishop reports it as a common summer resident at Pea Island, breeding in May. The nests are placed among the drift on the sand. The eggs are pale buff in ground color, speckled with black and purplish gray. Size 1.29 x .95. They are four in number and are deposited in a mere depression in the sand.

Fig. 112. Piping Plover.

Genus Ochthodromus (Reichenb.)

133. Ochthodromus wilsonius wilsonius (*Ord.*). Wilson's Plover.

Ad. ♂.—Lores, front of crown, and a band on the breast black; rest of underparts, forehead, and an indistinct ring on the nape white; sides of the head and nape sometimes with rufous markings; cheeks, crown, and back brownish gray; inner tail-feathers fuscous, outer ones becoming white. *Ad.* ♀.—Similar, but black replaced by brownish gray with rusty on breast. *Juv.*—Similar to ♀, but upperparts margined with grayish. L., 7.50; W., 4.50; Tar., 1.10; B., .80. (Chap., *Birds of E. N. A.*)

Range.—Southern States, breeding from Virginia southward; winters from Florida to Central America.

Range in North Carolina.—Coastal region in summer; breeds.

Fig. 113. Wilson's Plover.

The Wilson's Plover may always be known among its near relatives by the comparatively large size of the bill. In North Carolina it is one of the most common and widely distributed beach-nesting birds. Here, on the wide, undulating stretches of sand, where shells and ocean flotsam abound, this little plover makes its nest and rears its downy young. With an inconspicuous coloration that harmonizes well with its surroundings, it is at all times difficult to distinguish. A rapidly twinkling and moving blur among the shells on the dazzling sand is about all that the sun-tired eye catches as the bird runs swiftly from the neighborhood of its nest. Ghostlike and intangible, it seems to glide along.

The nest is a mere hollow in the sand, and both eggs and nest are as inconspicuous and difficult to detect as the bird itself. Nesting usually takes place in May, though the species is with us commonly from April to September.

Before incubation the bird has a habit of standing alongside its nest and shading, with its body, the eggs from the direct rays of the sun. The eggs are two to four in number, measuring about 1.00 x 1.45. They are spotted with black on a drab ground-color. Pearson has found their nests on the sea-beaches in Carteret County (Cape Lookout), Onslow County (Stump Sound) and New Hanover County (Corncake Inlet).

22. FAMILY APHRIZIDÆ. SURF-BIRDS AND TURNSTONES

A small family, including birds allied to the plovers, but with the feet four-toed and the tarsus scutellate in front. A single genus and species occurs with us.

Genus Arenaria (Briss.)

134. Arenaria interpres morinella (*Linn.*). RUDDY TURNSTONE.

Description.—Varied with black, white, and chestnut above; lower parts mainly white, the chest deep black in adult, but only mottled with dusky in immature birds. L., 9.00 to 10.00; W., 5.50 to 6.00.

Range.—Both Americas, breeding in the Arctic regions, and wintering from South Carolina to Brazil.

Range in North Carolina.—Coastal region during the migrations, at least from late March to early June, and from mid-August nearly to winter.

FIG. 114. RUDDY TURNSTONE.

The Turnstone is perhaps the most handsomely marked of all our shore-birds. Strictly coastwise in its habits, its brilliant and striking coloration, its well proportioned and robust outline, and its strong, rapid flight, all go to make it a bird which once seen will ever be remembered. Not often congregating in large flocks, the small bunches in which it usually travels may be found everywhere along the open beaches during the migrations. It mingles freely with other species of like habits, following the receding tide out on the mud-flats and oyster rocks in search of its favorite food. It is a quick and graceful flyer and comes very well to decoys, although usually a much shyer bird to approach in the open than are many other birds of the beaches. Turnstones usually leave for the North in May; yet individuals may be found nearly, if not quite, every month in the year.

OYSTER-CATCHER. Haematopus palliatus (Temm.)

23. FAMILY HÆMATOPODIDÆ. OYSTER-CATCHERS

Genus Hæmatopus (Linn.)

135. Hæmatopus palliatus (*Temm.*). OYSTER-CATCHER.

Ad.—Head, neck, and upper breast glossy black, back and wing-coverts olive-brown, secondaries white, primaries fuscous, upper tail-coverts white, base of tail white, end fuscous, lower breast and belly white. *Im.*—Similar, but head and neck blackish and upperparts more or less margined with buffy. L., 19.00; W., 10.50; Tar., 2.40; B., 3.40. (Chap., *Birds of E. N. A.*)
Range.—Both Americas, breeding from Virginia to Chile and Brazil.
Range in North Carolina.—Coastal region, resident.

This fine bird is most striking in appearance and exceedingly conspicuous. Broadly marked in solid brown-blacks and whites, with a large, brilliant vermilion-colored bill, red eyelids, and large yellow eye, there is no possibility of ever mistaking it for anything but what it is—the feathered king of the shell-strewn sand-beaches.

The flight of the Oyster-catcher is strong and regular, and by no means slow. But, for a bird, its long suit is running! If you have ever tried to run down a young one which has not quite reached the flying stage, and this happens to be on a hot August day, with the sun shining clear on the red-hot sand and no breeze stirring, then you can appreciate this bird's power of leg.

The open beaches are where these birds make their nests, and April and May are the usual nesting months. Pearson and Brimley have found their eggs and young on Royal Shoal Island in Pamlico Sound, at Cape Lookout in Carteret County, on the beach near Ocracoke, and at Lockwood's Folly in Brunswick County. They seem to stay on our coast the whole year, though less common in winter, particularly toward the northern border of the State.

The flat, screw-driver-pointed bill is an admirable tool for opening, not oysters, but the smaller and weaker shelled bivalves on which it feeds. At low tide the bird is frequently seen feeding on the exposed mud-flats and oyster rocks.

In the neighborhood of Southport it is not at all uncommon, usually being seen in pairs. Occasionally, however, ten or a dozen may be in sight at one time, in places where food is abundant. Pearson and H. H. Brimley counted thirty-two on a small mud-flat opposite Southport in August, 1909.

Some writers state that the bill is often bent sidewise at the tip, as if from using it as an "opener," chiefly in one direction. This feature we have not noticed. We have, however, seen one specimen with the upper mandible about one inch shorter than the lower, which might indicate either a break or excessive wear. The Oyster-catcher goes by the name of "Clam-bird" on our coast.

The eggs of the Oyster-catcher are creamy or white, spotted and blotched irregularly with different shades of brown, and are rather oval in shape. Average size 2.20 x 1.56. Two is the usual number deposited.

X. ORDER GALLINÆ. GALLINACEOUS BIRDS

Large or medium sized land-birds, formerly grouped as "scratchers." They comprehend such familiar forms as chickens, turkeys, partridges, and quails. Our few species fall into four families, each represented by a single genus and species.

KEY TO FAMILIES

1. Size very large; head naked. *Meleagridæ*, Turkeys.
1. Size smaller. Head feathered. See 2.
2. Tail longer than wings. *Phasianidæ*, Pheasants.
2. Tail shorter than wings. See 3.
3. Tarsus more or less feathered. Wing more than 6.00. *Tetraonidæ*, Grouse.
3. Tarsus naked. Wing less than 6.00. *Odontophoridæ*, Bob-whites.

24. FAMILY ODONTOPHORIDÆ. AMERICAN QUAILS

Genus Colinus (Goldf.)

136. Colinus virginianus virginianus (*Linn.*). BOB-WHITE, "PARTRIDGE," "QUAIL."

Description.—Upperparts mottled grayish, tinged with rusty and waved with dusky and whitish; lower parts whitish varied with black and rusty; adult males with stripe over eye and broad patch covering chin, throat, and malar region white, rest of head black; sides of head spotted with triangular spots of white and black. Adult females with head buff and brown instead of white and black; chest mainly light cinnamon. L., 9.50–10.75; W., 4.25–4.75.

Range.—Eastern United States.

Range in North Carolina.—Whole State at all seasons.

The most popular game bird of North Carolina is the Partridge, or "Quail" as the northern hunter knows it. It ranges from the mountains to the sea.

North Carolina contains ideal climatic and other necessary conditions for the well-being of the Bob-white. Any reasonable amount of protections will insure a plentiful stock of this valuable game bird for many years to come. Not being dependent on the uncultivated wilderness, as are so many other forms of game, the more land that is opened to cultivation, the greater has been the increase of the Quail.

Wherever field peas or grain is grown, there Bob-white repairs, the stray seed from the farmer's crops seeming to be much to his taste. He is credited with destroying chinch bugs, grasshoppers, boll weevils, striped cucumber beetles, and other injurious insects, and with varying his diet in winter with the seeds of many weeds which vex the farm lands. His game qualities often enable the farmer to lease the shooting privileges of his land for enough, or more than enough, to pay the taxes.

It nests both early and late, and sometimes a brood almost grown may be found on November 15 (the usual opening day for shooting in the State), associated with a brood of little "squealers" only just able to fly.

The full complement of eggs is from ten to eighteen; sometimes more are found, but such extraordinary sets are probably the result of two hens occupying the same nest. The principal laying month is May.

BOB-WHITE. Colinus virginianus virginianus (Linn.) Male and Female.

The name Bob-white comes from the loud and clear two-noted whistle of the male in the nesting season, when this most musical and far-reaching call may be heard a long distance on a still day. When a covey has been scattered, a rallying call of three notes is used. These latter are the calls most familiar to the hunter.

25. FAMILY TETRAONIDÆ. GROUSE

This family is composed of birds nearly allied to the preceding family, but usually of greater size and more northern range. They may be distinguished by having the tarsus and nasal fossæ feathered, instead of naked as in the Bob-whites.

Genus Bonasa (Steph.)

137. Bonasa umbellus umbellus (*Linn.*). RUFFED GROUSE, "PHEASANT."

Description.—Head crested, sides of neck with a ruff of soft dark feathers; upperparts varied with black, brown and gray, tail dusky with several narrow bands of black, a broad subterminal band of black, and a terminal one of grayish; lower parts whitish or buffy, marked with broad bars of brown. Female smaller than male, with ruff on neck reduced in size or absent. L., 15.50 to 19.00; W., 7.00 to 7.50. (Chap., *Birds of E. N. A.*)

Range.—Wooded regions of eastern United States, south in the mountains to northern Georgia.

Range in North Carolina.—Resident in the mountain region.

FIG. 115. RUFFED GROUSE.

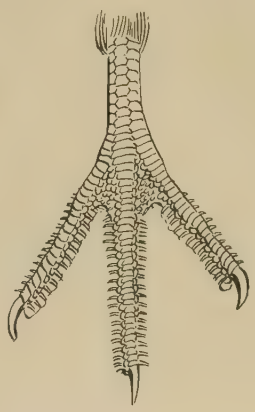


FIG. 116. FOOT OF RUFFED GROUSE.

The Ruffed Grouse is known in this State as "Pheasant." With us it is a bird of the mountain region only, ranging chiefly above the twenty-five hundred-foot level.

Perhaps the most striking characteristic of this grouse is the habit the male has of "drumming." It is the mating call to the female, or a challenge to a rival cock, and few birds of like size possess a more distinctive and far-reaching one. Starting with a slow, bass, drum-beat, the notes shorten rapidly until they end with the quick roll of a kettle-drum. Through the Grouse's custom of frequently drumming while perched on a log, it was formerly supposed that the sound proceeded from the

strokes of the wings upon the wood. Now, however, it is known that the sound results from rapid wing-beats against the air. The bird may stand on a stump or rock or anthill, but in no case could the effect be produced by beating its perch.

No more gamey bird inhabits our upland woods. To hunt it means thicket shooting at a whirling brown mass, that rises with a roar and goes through the bushes and saplings like a feathered cannon-ball. You may be a good shot at ducks from a blind, or at quail in the open, but you must learn many things if you would become a successful hunter of the Ruffed Grouse.

Eight to fourteen eggs are laid, and the nest is usually well hidden in a fallen tree-top, under a brush-pile, or at the base of a stump or tree. Sometimes, however, it is made in the open. The eggs blend well with the dead leaves, pine straw, etc., with which the nest is lined. Incubation usually takes place in May. The chicks, like the young of other related species, can run and hide almost as soon as clear from the shell. As is the case with young turkeys, they are carefully guarded from the wet by the mother. Dampness, perhaps, is the greatest cause of fatality to which they are exposed.

The food of the Ruffed Grouse is mast of various kinds, berries and buds, with grasshoppers and other insect life.

They usually roost in trees and often take refuge in the branches when flushed. When the snow is deep they sometimes pass the night in it, going to roost with a plunge through the surface.

26. FAMILY MELEAGRIDÆ. TURKEYS

Genus Meleagris (Linn.)

138. Meleagris gallopavo silvestris (*Vieill.*). WILD TURKEY.

Description.—Glossy, coppery black, the wing-quills and secondaries slaty barred with white. Tail gray, barred with black, and tipped with *deep rusty* instead of white, as in the domestic turkey. This bird may be distinguished from the domestic turkey by the brownish instead of white tips to the upper tail-coverts and tail. L., 48.00–50.00; W., 21.00; T., 18.50; Weight, 12–30 lbs.

Range.—Eastern United States.

Range in North Carolina.—Permanent resident in all parts of the State.

This, the largest and noblest game-bird found in the United States, is still fairly common over a large area of North Carolina, wherever sufficient bodies of woodland suitable to its habits yet remain. It occurs from the mountains to the sea; and even in the more thickly settled sections of the State. Where large bodies of forest are yet spared, it lives and breeds and holds its own with remarkable tenacity. Even in Wake County, within a few miles of the State capital, it still occurs sparingly. In November, 1898, Pearson frequently saw these birds either on or in the immediate vicinity of the campus of the State University at Chapel Hill.

Common as it is in North Carolina, the inexperienced turkey hunter must expect to see many more tracks and scratching-places than birds, as this is one of the wariest denizens of our forests. All its senses capable of noting danger seem ever on the alert, sight and hearing both being of the keenest. But once in a while one may almost walk up to Turkeys in the open woods.

Late in 1910 H. H. Brimley, while in a large eastern swamp hunting for bear sign, suddenly rounded the enormous perpendicular mass of roots and earth thrown up by a huge storm-felled tree, when a quick "cluck, cluck" attracted his attention to three big gobblers which were on the point of leaping into the air. As they soared skyward through the tall gums the rifle spoke and a few feathers drifted slowly groundward, though no bird followed. These three gobblers were not more than a dozen yards distant when flushed, and a shotgun should have accounted for at least two of them.

Fig. 117. Wild Turkey.

On another occasion three of us were hurrying to our deer-stands, each leading a hound by a chain. While passing through a belt of heavy woods, with low, scattering undergrowth, the leading man suddenly dropped the chain and threw up his rifle. Following the line of his aim we saw a flock of Turkeys rise all around us. Several shots were fired, but nothing fell, for a rifle is not the best of weapons for snap-shooting at flying game in thick woods.

We have, on a few other occasions, come suddenly on Turkeys in the woods, but such instances are exceptions, as the neophyte in Turkey hunting will soon discover.

From eight to twelve eggs is the full complement. Many hunters claim that a

four-year-old hen lays the largest setting, the bird being then at her prime. Well hidden indeed must be the nest. Skunks, opossums, and raccoons are ever on the alert for scrambled eggs, and even the old gobblers will destroy a family, whether in the form of eggs or helpless young. Among the young Turkey's enemies are wildcats, foxes, and some of the larger birds of prey.

In the fall the old males join the hens and their well-grown broods, until sometimes flocks of very large size result. With us, however, eight or ten birds make up the average gang, though larger companies are by no means rare.

The food of the Wild Turkey is varied. The young are particularly fond of grasshoppers, while various nuts, berries, and acorns form the bulk of the food of the adults. We have seen their tracks out on a fresh-water marsh, which were made, we were told, when the birds were in search of small frogs. In the swamps of eastern North Carolina the black-gum berries are a staple article of diet, the leafy carpet of the woods where black-gums grow bearing abundant evidences of the fact.

The principal method of hunting these birds is by scattering the flock and afterwards calling them up individually within range of the gun.

27. FAMILY PHASIANIDÆ. PHEASANTS

Genus Phasianus (Linn.)

139. Phasianus colchicus × phasianus torquatus. ENGLISH RING-NECKED PHEASANT.

Description.—General color of male, coppery chestnut, with bright purple or bronze reflections. The neck is metallic blue, tail long and pointed, with dark crossbars. The female is brownish, mottled and varied with dusky; lower parts plain; tail barred. L., 30.00; W., 10.00; T., 18.00–20.00.

Range in North Carolina.—At present confined largely to the piedmont section of the State.

While the English Ring-necked Pheasant is not a native, it has been introduced and reared on some of the large game preserves in the central part of the State. Wandering beyond the borders of these preserves, this splendid game bird may now be frequently met with in various localities; especially is this true in the counties of Randolph, Chatham, Davidson, and Guilford.

Large in size, of most gorgeous plumage (in the case of the male), and one of the best birds for the table, the English Ring-necked Pheasant is worthy of the heartiest efforts of the bird-protectionist. With proper regulations for its propagation and protection, it should prove a valuable addition to the avifauna of the State. Thousands of them breed today in a wild state in central North Carolina. The English Ring-necked Pheasant is a hybrid between the English Pheasant (*Phasianus colchicus*) and the Ring-necked Pheasant (*Phasianus torquatus*).

XI. ORDER COLUMBÆ. PIGEONS AND DOVES

28. FAMILY COLUMBIDÆ. PIGEONS AND DOVES

KEY TO GENERA

1. Tail short, rounded; wing less than 4.00. *Chæmepelia.*
1. Tail long and pointed. *Zenaidura.*

The passenger pigeon, *Ectopistes migratorius* (*Linn.*), is doubtless now extinct. A reward of $1,500 was recently offered by some American ornithologists for the discovery of a nest. This was advertised by the Audubon societies in all parts of North America; but when the offer closed on December 1, 1911, after having stood for two years, there had been found no one to claim the reward. Formerly these birds occurred in uncountable millions, their flights darkening the sky and their roosting and nesting places being strewn with broken branches torn from the trees by the sheer weight of the tons of bird-life piled upon them. A nesting colony in Michigan in 1876 or 1877 occupied the forest over a territory twenty-eight miles long by three or four miles wide. The last known nesting site in Michigan occurred in 1881, and was "only of moderate size—perhaps eight miles long."—Brewster.

Actual records of their occurrence in North Carolina are not plentiful, although one may often hear old residents speak of their appearance in great flocks many years ago. H. H. Brimley spent the whole morning following a single specimen in some pine woods near Raleigh in the spring of 1891. This was the last of the three specimens he has ever seen alive. Cairns reported it as very rare in Buncombe County in the early nineties, and collected a female in 1894. Dr. K. P. Battle, of Raleigh, a careful observer of birds, states that when at Bingham School between 1871 and 1872 he saw a flock about a mile in width. When at the State University at Chapel Hill, in 1878, he killed one out of a bunch of three.

There is no definite, incontrovertible explanation of the cause of the total extinction of this bird, which in teeming millions swept over the country only a few years ago. We only know that the vast nesting sites, which thirty years ago showed a riot of bird life so crowded and so extensive as to be far beyond the power of human mind to grasp in terms of numbers of individuals, are now silent and deserted. Of the myriads that once obscured the rays of the sun, only a solitary individual remained in existence when these lines were written, a female eighteen years of age confined in a cage in the Zoological Gardens at Cincinnati, Ohio. This specimen, apparently the last of the race, died on September 1, 1914. Their extinction was doubtless hastened by the great slaughter to which they were subjected by the hands of man.

Should one of these birds by any chance fall into the hands of any of our readers, it may be known by its general resemblance to the Mourning Dove, coupled with much larger size.

Genus Zenaidura (Bonap.)

140. Zenaidura macroura carolinensis (*Linn.*). Mourning Dove.

Description.—Brownish olive, glossed with blue and vinaceous; a dark ear-spot in male; belly cream-buff; plumage with metallic luster. Female duller. L., 11.00–13.00; W., 5.75–6.00; T., 5.75–6.50.

Range.—Eastern North America, universally distributed.

Range in North Carolina.—Whole State at all seasons; common.

Mourning Doves are common residents throughout the State. In the fall and winter they gather in flocks and many frequent the grain and peanut fields. They are birds of strong appetites. One killed by a United States Government collector

in Kentucky was found to contain over 7,000 weed-seeds. They are regarded as game-birds in North Carolina, and many are annually shot, particularly in the early autumn.

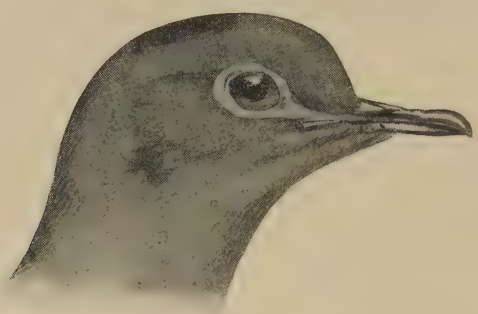


FIG. 118. MOURNING DOVE.

The nest is a frail structure of sticks and twigs placed on the ground, on stumps, or the limbs of trees. Two white, elliptical eggs are deposited. In the mating season doves may often be seen sailing through the upper air much after the manner of some of our small hawks.

Genus Chæmepelia (Swains.)

141. Chæmepelia passerina terrestris (*Chap.*). GROUND DOVE.

Description.—Grayish olive, with bluish gloss, the head and breast vinaceous in male. Female duller. L., 6.00–7.00; W., 3.00–3.50; T., 2.50.

Remarks.—May be easily told from the Mourning Dove, the only other North Carolina species, by its small size and short tail.

Range.—Southeastern States.

Range in North Carolina.—Occurs more or less rarely in the eastern section.

FIG. 119. GROUND DOVE.

This is one of our rarest birds, having a much more southerly habitat than the preceding species. North Carolina is on the extreme northern limit of its range, and definite knowledge of its occurrence is very limited. Two records from Buncombe and two from Craven County are all that we have had until recently. On October 7, 1911, however, a specimen was killed near Wilson by L. T. Edwards,

and was sent to the Museum in the flesh by P. L. Woodward. Mr. Woodward had previously written in regard to the occurrence of small doves in his locality. We are, therefore, led to suppose that its occurrence in that region is somewhat more than accidental. There appears to be no authentic record of its breeding in North Carolina.

This is a tiny pigeon, little larger than a Bobolink or Cedar Bird. It is a bird of the fields and open woods. In Florida, Pearson has found the nests of this species situated on the ground, on the top of stumps, on the larger limbs of orange trees, on the horizontal rails supporting Scuppernong grape-vines, and once in a cabbage palm. He describes it as a very confiding little bird, much frequenting orchards, fields, and door-yards, and states that when taking flight it often strikes its wing-tips together, thus producing a sound like that made in the same way by the Mourning Dove.

XII. ORDER RAPTORES. BIRDS OF PREY

This order includes the hawks, eagles, vultures, kites, falcons, and owls. All are birds with strongly hooked beaks which are covered at the base with a cere or covering of naked skin and through which the nostrils open. Except in the vultures, the claws are sharp and curved.

KEY TO FAMILIES

1. Head entirely naked in adult, hind toe elevated, short. *Cathartidæ*, American Vultures.
1. Head nearly or quite fully feathered, hind toe on a level with the rest. See 2.
2. Eyes directed forward, surrounded by a more or less complete disk of radiating feathers. Owls. See 3.
2. Eyes directed sideways, as usual in birds (not surrounded by a disk of radiating feathers except in the marsh hawk). Hawks and Eagles. See 4.
3. Facial disk subtriangular. Middle claw pectinate. *Aluconidæ*, Barn Owls.
3. Facial disk subcircular. Middle claw not pectinate. *Strigidæ*, Owls.
4. Outer toe reversible, claws all of same length, narrowed and rounded on lower side. *Pandionidæ*, Ospreys.
4. Outer toe not reversible, claws graduated in size, the hind claw the largest, the outer claw the smallest. See 5.
5. Nostrils small, circular, with a conspicuous central bony tubercle; cutting edge of upper mandible with a strong tooth separated from hooked tip of bill by a distinct notch. *Falconidæ*, Falcons.
5. Nostrils not circular, nor with an inner bony tubercle. *Buteonidæ*, Hawks and Eagles.

29. FAMILY CATHARTIDÆ. AMERICAN VULTURES

This family is composed of large Raptores, which have the hind toe short and elevated, the head naked, and the claws blunt and but slightly curved. They feed almost exclusively on carrion. Some of the largest birds of flight belong to this family. The Condor of the Andes, and the California Condor of our Pacific States, sometimes have an expanse of wings of nearly twelve feet.

KEY TO GENERA

1. Wings very long, primaries reaching to end of tail or further (when wings are closed). Tail rounded, nostrils large and broad. *Cathartes.*
1. Wings short, primaries scarcely reaching middle of tail. Tail truncate, nostrils small and narrow. *Catharista.*

Genus Cathartes (Illig.)

142. Cathartes aura septentrionalis (*Wied.*). TURKEY VULTURE.

Description.—Black above and below, the feathers of the upperparts so broadly edged with brown that the bird is more brown than black above. Skin of head and neck red in adult, dusky in young. L., about 30.00; W., 22.00; T., 12.50.

Range.—Temperate and Tropical North America.

Range in North Carolina.—Whole State at all seasons.

FIG. 120. TURKEY VULTURE.

The Turkey Vulture, better known as the "Turkey Buzzard," is one of our best known birds, and has been considered a friend of man on account of its work as a scavenger and devourer of dead and unburied carcasses. However, veterinarians assert that it carries the germs of hog-cholera from one hog-pen to another, and thus aids in the spread of that disease.

Unlike the Black Vulture, the Buzzard seems to show no particular preference for large carrion. Sailing low over the ground, it will stop as readily for a dead snake or rabbit as for the remains of a cow. It can be distinguished from the Black Vulture when flying by the fact that the wings are usually bent at the carpal joint

so that the forward primaries point obliquely backward, instead of at right angles to the body, as is the case with our other vulture.

Although it is not an uncommon joke in this State to say that the "Buzzard" is protected as a "song-bird," yet, as all who are familiar with it can testify, it is practically voiceless. An occasional hiss, uttered when disturbed at the nest or when quarreling with others over its food, is the only sound that we have ever heard the adult birds utter. Young in the nest, however, are sometimes very noisy.

In central North Carolina the eggs are laid in April or May. These are two in number and are deposited in a slight depression on the ground in the shelter formed by an overhanging rock, a fallen tree-trunk, or even the limbs of a prostrate tree. Sometimes they are laid in the hollow base of a tree or within a hollow log. They have a creamy white ground-color, blotched and spotted with various shades of brown and lavender. Size 2.74 x 1.89. The young at first are covered with white down.

Genus Catharista (Vieill.)

143. Catharista urubu urubu (*Vieill.*). Black Vulture.

Description.—Uniform dull black, including bare skin of head and neck. L., about 23.00; W., 17.00; T., 8.00.

Range.—Tropical and warm temperate America from North Carolina to Argentina.

Range in North Carolina.—Irregularly present at all seasons in all parts of the State east of the mountains.

Fig. 121. Black Vulture.

The Black Vulture, sometimes called in this State the "South Carolina Buzzard," occurs irregularly at all seasons, and usually in flocks, throughout the greater part of North Carolina. In the mountains, however, our only record comes from Buncombe County, where Cairns called it very irregular in its occurrence. At Chapel Hill, and at Greensboro, Pearson has never seen them except in November, December, and January.

The eggs, which are often laid on the ground, in canebrakes, or in thick growths of vines and underbrush, are two, and are a little larger than those of the Turkey Vulture, and with fewer markings; they differ also in the ground-color, this being

pale grey-green instead of creamy white, as in the other species. The only sets of eggs we know to have been taken in North Carolina were secured on an island in Neuse River, two miles above Milburnie, in Wake County, on April 20, 1891, and April 20, 1893, and April 6, 1896, by Brimley. The eggs found on the two former dates were advanced in incubation, while those on the last date were fresh.

30. FAMILY BUTEONIDÆ. HAWKS, EAGLES, KITES, ETC.

This family includes all of the hawk tribe, except the true falcons, and the Osprey or Fish Hawk.

They have strong, hooked bills, and long, curved, sharp claws. All are diurnal in their habits and they constitute our typical birds of prey. Many of them feed on small mammals, others partake extensively of reptiles, while fish, crustaceans, and insects are not despised. Many of these points, however, are shared in common with the Ospreys, all the claws of which are the same length, and the Falcons, which have circular nostrils with a central bony tubercle.

KEY TO GENERA

1. Wing more than 20, tail not forked. Eagles. See 2.
1. Wing not more than 18. See 3.
2. Tarsus feathered to the toes. *Aquila.*
2. Tarsus naked all round for at least lower third. *Haliæetus.*
3. Tail deeply forked. *Elanoides.*
3. Tail not deeply forked. See 4.
4. Tarsus densely feathered in front to base of toes. *Archibuteo.*
4. Tarsus naked all round. See 5.
5. Tarsus reticulate all round. *Elanus.*
5. Tarsus scutellate in front. See 6.
6. Face with a slight ruff, as in the owls; tarsus about as long as tibia; wings long. *Circus.*
6. Face without a ruff. See 7.
7. Tarsus about as long as tibia; wings short, little longer than tail. *Accipiter.*
7. Tarsus decidedly shorter than tibia. See 8.
8. Tarsus scuttelate in front and behind. *Buteo.*
8. Tarsus scutellate in front only. *Ictinia.*

Genus Elanoides (Vieill.)

144. Elanoides forficatus (*Linn.*). SWALLOW-TAILED KITE.

Description.—Head, neck, and entire lower parts, and band across rump white; back, wings, and tail black. Distinguished from all our other hawks by the very deeply forked tail. L., 19.00 to 25.00; W., 15.50 to 17.75; T., 12.50 to 14.50.

Range.—Tropical and warm temperate America; regularly from North Carolina southward; casually much farther north.

Range in North Carolina.—Summer resident in Craven County, and probably other parts of the east. Occasional in the mountain region.

In gracefulness of flight the Swallow-tailed Kite is the equal of a tern or swallow, and on the wing it appears not wholly unlike a gigantic member of either group.

In this State it seems to occur regularly in the lake region of Craven County below New Bern, where we have observed it during summers of 1905, 1906, 1907, and 1909. Pearson also noted a specimen near Waccamaw Lake, in Columbus County, on June 16, 1898. While not of common occurrence, it is evidently a regular summer visitor in Craven County, where it has acquired the name of "Snake

SWALLOW-TAILED KITE. Elanoides forficatus (Linn.)

Hawk" from its habit of eating such reptiles. In western North Carolina we have had several records from the Black Mountains. Here it appears to be a late summer transient or straggler.

The nest, like those of other hawks, is built mostly of twigs, and is usually placed in the crotch of some tall tree, usually near the top. The eggs are from two to four in number, dull ashy gray, or creamy white, blotched and spotted with various shades of brown and reddish brown. Size 1.85 x 1.50. We know of no nest of this species being found in North Carolina.

A species of the genus *Elanus*, the White-tailed Kite (*leucurus*), known by its white head and tail, may occur in the State. Its length is about 16.00.

Genus Ictinia (Vieill.)

145. Ictinia mississippiensis (*Wils.*). Mississippi Kite.

Description.—Adult uniform plumbeous, becoming whitish on head, and blackish on tail and wings. Young with head, neck, and underparts white, longitudinally striped or spotted with brown. L., about 14.50; W., 11.50; T., 6.50.

Range.—Southern United States, Mexico, and Central America, north to Georgia, south to Guatemala.

Range in North Carolina.—So far, only recorded from Cherokee County.

Fig. 122. Mississippi Kite.

The Mississippi Kite gains a recognized place in the fauna of our State through its casual appearance in Cherokee County. Mrs. Donald Wilson records one taken near Andrews, May 26, 1893. Collett also tells us of two other specimens being killed in that neighborhood about the same date.

This bird, like the preceding, is said to select the tops of high trees for nesting sites. The eggs are white, usually without markings, and are two or three in number. Size about 1.60 x 1.30.

The range of the Mississippi Kite is chiefly west of the Mississippi River.

Genus Circus (Lacep.)

This genus contains several foreign species, but is represented in North America by only one—the Marsh Hawk. The genus differs from other hawks in having the feathers of the face forming a slight ruff, somewhat as in the owls.

146. Circus hudsonius (*Linn.*). MARSH HAWK; "RABBIT HAWK."

Description.—Adult male, pale bluish gray, the rump and underparts whitish; female and immature male dusky brown above, the underparts whitish, streaked with brown, rump white. L., 18.00 to 20.00; W., 14.00 to 15.00; T., 8.50 to 10.25.

Range.—Whole of North America, south in winter to Panama and West Indies.

Range in North Carolina.—Whole State east of the mountains in winter; otherwise recorded by Cairns as an uncommon fall transient in Buncombe County, and by Coues as a common resident near Beaufort, on the coast.

FIG. 123. MARSH HAWK (Male).

The Marsh Hawk occurs commonly in North Carolina from August 15 to late April, and may frequently be seen in winter, flying low over the earth with slow measured flaps of its long wings. Now and then it pauses in its wandering course to hover briefly over the dead grass ere it drops suddenly on some luckless mouse.

Its well-known fondness for small rodents has earned it a name for usefulness which should commend it to every farmer in the State.

The eggs are white, usually unmarked, but sometimes faintly spotted with brown. They number four to six, and measure about 1.80 x 1.40. They are laid in April or May in a nest built, unlike that of most hawks, on the ground in a meadow or pasture. We have no breeding-records from this State, but it is said that this hawk has been known to nest on Roanoke Island.

Genus Accipiter (Briss.)

Comprises hawks with short, rounded wings and a long tail. They prey mostly on birds, and are bold marauders of the farmer's chicken yard.

Two species occur with us, and a third—the Goshawk—may occasionally wander this far south.

KEY TO SPECIES

1. Tail emarginate, even, or nearly so, wing not more than 8.80. Sharp-shinned Hawk.
1. Tail rounded, wing not less than 8.85. Cooper's Hawk.

147. Accipiter velox (*Wils.*). SHARP-SHINNED HAWK.

Description.—General color bluish gray, underparts white barred with rusty; immature birds dusky brown above, underparts white streaked with brown or dusky. L., 10.75 to 14.25; W., 6.50 to 8.25; T., 5.50 to 7.25 and feathers of uniform length. The males are much smaller than the females.

Range.—Whole of North America, south in winter to Panama.

Range in North Carolina.—Resident in the mountains, but usually only a winter visitor elsewhere in the State.

FIG. 124. SHARP-SHINNED HAWK.

Although the Sharp-shinned Hawk is undoubtedly present throughout the State, we have but few actual records. Cairns called it a common resident in Buncombe County, while in the central region we have it recorded as a winter visitor in Orange, Wake, Guilford, and Granville counties, where it occurs from the middle of August to April 15. Coues recorded it as once taken at Fort Macon in September.

This species is one of the few hawks that confine their attacks mainly to birds. C. S. Brimley shot one that had captured a Flicker which must have weighed almost as much as the hawk, and Pearson saw one catch a Quail in Granville County. In pursuit of its prey, it can twist and double in and out among bushes or trees with most surprising speed.

Late in April, 1894, a set of three fresh eggs was brought to Pearson at Guilford College by a boy of the neighborhood, who stated that he had taken them from a nest in a pine tree about twenty-five feet from the ground. Three weeks later the boy appeared with four more eggs which he had collected from another nest in close proximity to the former one. Both nests were evidently made by the same pair of birds. We have no other record of this species breeding in the State.

148. Accipiter cooperi (*Bonap.*). COOPER'S HAWK; "BLUE DARTER"; "CHICKEN HAWK"; "BLUE-TAILED HAWK."

Description.—Very similar to preceding, but larger, and crown blackish in adult. L., 16.00; W., 9.00; T., 9.00 and with rounded end.

Range.—Whole of temperate North America, including most of Mexico.

Range in North Carolina.—Whole State at all seasons.

The Cooper's Hawk is known to be a permanent resident in all portions of the State, and in many districts is abundant. It may be noted that the local names given this species apply as well to the Sharp-shinned Hawk.

This is the hawk which preys conspicuously upon chickens, although its misdeeds are very often attributed to the larger, clumsier hawks of the genus *Buteo*, which are also commonly and erroneously called "Chicken Hawks." Besides poultry, which of course constitutes only a small portion of its food, this bird preys to a considerable extent upon various small birds, and seems to have but small liking for the rats, mice, reptiles, and large insects so much esteemed as articles of diet by many of our other hawks.

FIG. 125. COOPER'S HAWK.

The nest is often built in the main crotch of a medium-sized tree, or on a limb close to the trunk. It is constructed of twigs or small sticks; sometimes the old nest of a crow or of some other hawk is used. The eggs are two to four in the southern part of its range, and are frequently unmarked, though not uncommonly lightly blotched or marked with some shade of brown or drab. Size 1.95 x 1.50. They are generally laid in May or June.

Genus Buteo (Lacep.)

This genus includes a number of comparatively large and sluggish hawks, with rather long and broad wings, and a medium length of tail. In Europe they are known as "Buzzards."

KEY TO SPECIES

1. Four outermost wing quills with webs distinctly emarginated (abruptly narrowed on about the outer half). See 2.
1. Only three outer wing quills emarginate. See 3.
2. Outer webs of primary quills distinctly spotted with white. *Red-shouldered Hawk.*
2. Outer webs of primaries unspotted. *Red-tailed Hawk.*
3. Wing less than 12.00. *Broad-winged Hawk.*
3. Wing more than 14.00. *Swainson's Hawk.*

149. Buteo borealis borealis (*Gmel.*). RED-TAILED HAWK; "HEN HAWK."

Description.—Dark brown above, underparts white, much marked with rusty on the breast and dusky on the belly, the markings being heaviest and darkest on the belly. Tail rufous above, with subterminal black bar in adult, duller in young, with a number of narrow black bars. L., 20.00 to 23.50; W., 15.75 to 17.00; T., 9.00 to 9.75. The largest birds are usually females.

Range.—Eastern North America.

Range in North Carolina.—Whole State at all seasons.

FIG. 126. RED-TAILED HAWK.

The Red-tailed Hawk is not as a rule distinguished by our people from the next mentioned species, for, although larger, its superficial appearance is somewhat similar.

It is not very particular in its feeding habits, eating almost any living thing it can capture, from a spider to a hen. The major part of its food, however, appears to consist of mice, frogs, snakes, lizards, crawfish, and insects.

The nest is usually situated in the crotch of some large oak, and the same tree is frequently used by one pair for many years. It is a bulky structure of small sticks, lined with finer material. The eggs, which are deposited generally in April, vary from two to four in number. They are dull white, and are usually more or less heavily marked with irregular spots and blotches of brown. Size 2.38 x 1.80.

150. Buteo lineatus lineatus (*Gmel.*). RED-SHOULDERED HAWK.

Description.—Dark brown, the breast (in the adult) rust-red crossed with narrow bars of white; four outer primaries notched on their inner sides; tail with narrow bars of white. Immature birds with underparts white, streaked with dark brown, this streaking heaviest on the breast; tail dusky, barred with dull buffy. L., 17.75 to 19.75; W., 12.25 to 13.75; T., 8.25 to 9.25.

Range.—Eastern North America.

Range in North Carolina.—Whole State, resident at least east of the mountains.

The Red-shouldered Hawk is often confused in the popular mind with the preceding, and is likewise called "Chicken Hawk" or "Hen Hawk," although we have

never known one to kill a bird of any kind. It is undoubtedly the most abundant of our larger hawks. Cairns regarded it as only a winter visitor in Buncombe County. In most of the State, however, it is a resident throughout the year, building its nest in the crotches of large trees, usually oaks, along the creek bottoms. The eggs are laid in early April, and are usually two or three in number, of a whitish

FIG. 127. RED-SHOULDERED HAWK.

ground-color, variously marked with different shades of brown, buff, and gray. Size 2.15 x 1.70. On May 9, 1899, at Chapel Hill, Orange County, Pearson found two handsomely marked eggs in a nest situated in a pine tree thirty feet from the ground. At this date incubation was well advanced. H. H. Brimley has also found the bird nesting in pine trees.

151. Buteo swainsoni (*Bonap.*). SWAINSON'S HAWK.

Description.—Gray, variously streaked; usually a bright chestnut or brownish area on breast; tail with narrow dark bars, three outer primaries notched. L., 20.00; W., 15.00; T., 8.50.
Range.—Western North America, east to the Mississippi.
Range in North Carolina.—Recorded by Cairns from Buncombe County.

Swainson's Hawk is admitted to the fauna of this State on the strength of its being included in Cairns's list of Buncombe County birds, published in the *Ornithologist and Oölogist* for January, 1887. It is there spoken of as accidental. Cairns was so careful and accurate an observer that his records cannot be lightly thrown aside, and this one is therefore included here.

152. Buteo platypterus platypterus (*Vieill.*). BROAD-WINGED HAWK.

Description.—Brown above, whitish or fulvous below, variously streaked or barred; three outer primaries "notched" (as in the Swainson's Hawk), and without markings. L., 15.50; W., 10.50; T., 7.00. Easily distinguished from others of the genus by its smaller size.
Range.—Eastern North America.
Range in North Carolina.—So far, only known from Wake, Orange, and Buncombe counties in summer.

The Broad-winged Hawk, the smallest of our North Carolina buteos, is only known as a summer resident in North Carolina. At Raleigh it arrives about the first week in April, and, being a woodland bird of retiring habits, would hardly be noticed were it not for its peculiar, long-drawn whistle, quite unlike the screams uttered by other hawks.

Five sets of eggs of this species have been taken in Wake County, three being from the same nest, which the birds repaired and used in successive years, viz., 1890, 1891, and 1895. The other two sets were also taken in 1895. The date of these ranged from April 25, in 1890, to May 22, in 1895. The number of eggs was two in four cases and three in the fifth. A set was taken by Cairns in Buncombe County on April 25, 1890, which chanced to be the same day on which H. H. Brimley took his first set at Raleigh. All the Raleigh nests were in pines; the Buncombe nest was in an oak.

Fig. 128. Broad-winged Hawk.

Pearson records a female taken in Orange County, April 15, 1899 (*Catalogue of the Birds of Chapel Hill*, page 39).

The nest is rather large and is loosely constructed of sticks, lined with flat scales of bark, and a few leafy twigs of pine or oak. It is invariably placed in the crotch of a large tree. The eggs are dull grayish white in ground color, spotted or blotched with brown, or with faint grayish or lavender shell-markings, or both; shape, a short ovate, size 1.90 x 1.55.

The Broad-winged Hawk is distinctly beneficial, feeding on small mammals, such as mice and shrews; also on small reptiles, frogs, and the larvæ of large moths. They are seldom, if ever, known to destroy bird-life.

Genus Archibuteo (Brehm)

153. Archibuteo lagopus sancti-johannis (*Gmel.*). Rough-legged Hawk.

Description.—Chiefly whitish, streaked with rusty, but varying from this into a form where the plumage is entirely black. L., 22.50; W., 16.00; T., 9.50.
Range.—North America north of Mexico, breeding far northward.
Range in North Carolina.—Rare transient in the mountains.

The Rough-legged Hawk was recorded by Cairns as occasionally seen in winter and spring in Buncombe County. Besides this, our only record is from Blowing Rock, Watauga County, near which place one was seen September 10, 1908, at close range with an opera-glass by Z. P. Metcalf. He states that this individual was of very dark plumage.

FIG. 129. ROUGH-LEGGED HAWK.

Genus Aquila (Briss.)

154. Aquila chrysaëtos (*Linn.*). GOLDEN EAGLE.

Description.—Glossy dark brown, head and neck paler tawny brown. Length about three feet, spread of wings nearly seven feet; weight seven or eight pounds. Easily distinguished when at close range from the immature Bald Eagle by the fact that feathers grow on the ankles and feet entirely down to the toes. Its bill is also shorter. L., 30.00 to 35.00; W., 23.00 to 24.75.

Range.—Northern portions of Europe, Asia, and America, chiefly in mountainous regions.

Range in North Carolina.—Mountainous regions of the State, at all seasons; rare in the eastern section.

The Golden Eagle, which is perhaps our finest bird of prey, has been considered until recently as confined in this State largely to the mountains, in which region Cairns recorded it as quite common for so large a bird. The State Museum received specimens from Cherokee and Swain counties in 1904 and 1911.

As tending to show that the Golden Eagle is not as exclusively a mountain bird in this State as had been supposed, the following notes of its occurrence in the east are presented: On December 12, 1914, the State Museum received one in the flesh from Captain Haywood Clark of Wilmington. Inquiry elicited the fact that the specimen had been killed a day or two before by Mr. R. A. Cherry, of Speed, N. C., on the lands of the Roanoke and Tar River Gun Club, in Bertie County. Mr. Cherry had just killed a Wild Turkey from a blind, and had remained in the blind in the hope that others might be induced to come within shot. Suddenly this eagle swooped down on the dead Turkey and attempted to carry it off, when it was promptly killed by Mr. Cherry.

A live Golden Eagle that was kept in Pullen Park, near Raleigh, for years, came originally—as affirmed by Mr. Howell, the park keeper—from Pender County.

This species presumably builds its nest on the cliffs of the higher mountains, but we have no record of eggs or eaglets having been found in the State. The nests are bulky structures of sticks and twigs, usually placed on some exposed rocky ledge, but sometimes tall trees are used for the purpose. The eggs are generally two in number and have a rough shell, which is of a dirty white ground-color, sometimes without markings and sometimes blotched and spotted with various shades of brown. Size about 2.95 x 2.35.

Fig. 130. Golden Eagle.

Fig. 131. Foot of Golden Eagle.

Genus Haliæetus (Sav.)

155. Haliæetus leucocephalus leucocephalus (*Linn.*). Bald Eagle.

Description.—Dark brown, with feathers of head and tail white in adult, whole plumage blackish with white mottlings in young until three years of age. Known in all stages from the Golden Eagle by the tarsus not being feathered. Bill in adult yellow; in immature, plumage black. L., 33.00 to 36.00; W., 22.00 to 24.00; spread of wings about 7 ft.

Range.—Whole of North America.

Range in North Carolina.—Whole State, but only common in the coastal region; rare or occasional elsewhere.

The Bald Eagle, our National emblem, is not an abundant species in North Carolina except in the coast-country, breeding always, so far as we have observed, near large bodies of water. Hatteras Island was a favorite nesting place a few years ago, before the sawmill had eaten its way through the woods. Residents on the island speak of three breeding pairs, and Pearson captured two young there, early in May, 1898, which evidently had but just left the nest. On April 21, 1898, he was shown a nest on Roanoke Island, Dare County, from which a young bird had recently been removed. He secured the eaglet and sent it to the State Museum, where it was kept alive for many months. The shores of Core and Currituck sounds are other places where nests have more or less recently been recorded. The eggs are two or three in number, dull white, and are deposited in a nest which is often four or five feet in thickness. The same eyrie is frequently used for many

years in succession. Thus a nest at White Lake is known to have been occupied in 1909, 1910, and 1911. It is in a tall, living pine, with a dead pine of like size close by, the latter being used by the old birds as a lookout. In April, 1910, H. H. Brimley observed the two old birds, both in full adult plumage, perched on the dead tree at the same time, with another, presumably an almost grown young one, in the nest.

Far from being the proud, fierce, and noble bird which popular fancy paints as spending its time in screaming for liberty and trying to outstare the sun, the Bald Eagle is largely a carrion feeder, and not noted for its ferocity. It feeds more on dead fish than on prey caught by its own skill and boldness. In 1899 Pearson saw four eagles at one time feasting on the bodies of rays left by fishermen on the beach near Fort Macon. In winter, where any considerable amount of duck-shooting goes on, one or more eagles are usually to be found in the neighborhood on the

FIG. 132. BALD EAGLE.

FIG. 133. FOOT OF BALD EAGLE.

alert for crippled fowl. In June, 1910, a large alligator had been killed at Lake Ellis, and, after skinning, its remains were left for the buzzards to clear away. Next morning, on approaching the spot, several Turkey Vultures and one eagle rose from the carcass. As they got well under way a fearless little Kingbird (Bee-Martin) rushed after the Bird of Freedom and literally ran it out of the country.

A few years ago H. H. Brimley had one confined for several weeks in a wire enclosure. One day a Red-headed Woodpecker was put in the same cage. The result was most surprising, for the woodpecker immediately attacked the head of the eagle and caused the great bird so much annoyance, and evidently inspired it with so much terror, that in mercy the fierce woodpecker was removed.

Bald Eagles may occasionally be met with in other parts of the State. Thus Pearson secured an immature bird in Caswell County in February, 1894, and saw one at Chapel Hill, Orange County, in February, 1898. C. S. Brimley has twice

DUCK HAWK. Falco peregrinus anatum (Bonap.) Male and Female.

observed adult Bald Eagles near Raleigh, and the State Museum has specimens from Cabarrus, Wake, and Johnston counties, besides a number from the east. Mr. F. P. Latham, of Belhaven, shot one in February, 1914, while feeding on a lamb it had killed. On the authority of Cairns, we may regard it as a rare resident in the mountains.

31. FAMILY FALCONIDÆ. THE FALCONS AND CARACARAS

This family contains hawk-like birds with long pointed wings, possessing remarkable powers of flight, and including those most used in the knightly sport of falconry.

Genus Falco (Linn.)

KEY TO SPECIES

1. Wing more than 12.00. *Duck Hawk.*
1. Wing less than 12.00. See 2.
2. Back bluish-gray or brown. *Pigeon Hawk.*
2. Back tawny, with or without black crossbars. *Sparrow Hawk.*

156. Falco peregrinus anatum (*Bonap.*). DUCK HAWK.

Description.—Blackish ash above, the top of head darker; whitish below; cheeks with black patches; underparts very dark, feathers margined with rufous, in young barred with black. L., 15.50 to 20.00; W., 12.50 to 14.00; T., 6.50 to 8.00.
Range.—North and South America, breeding locally.
Range in North Carolina.—So far, only recorded from Buncombe and Surry counties.

The Duck Hawk, the American representative of the celebrated Peregrine Falcon, the "Falcon" par excellence of the old hawking days, is a rare bird in the State, as in fact it seems to be in many other parts of the country.

In the *Ornithologist and Oölogist* for February, 1889, Cairns writes of one which he saw carry off a chicken near Asheville. He further states that it is "seen occasionally during the summer months." Pearson found a pair haunting the crags of the "pinnacle" of Pilot Mountain, Surry County, in May, 1892, but a diligent search failed to reveal a nest on any of the accessible cliffs.

The eggs are laid on cliffs, little if any nest being constructed, and are generally four in number, often so heavily marked as to conceal the ground-color. Size 2.10 x 1.60.

Bendire, in *Life Histories of North American Birds*, says: "Its flight, when once fairly started in pursuit of its quarry, is amazingly swift; it is seemingly an easy matter for it to overtake even the fleetest of birds, and when once in its grasp resistance is useless. I have seen this falcon strike a Cinnamon Teal almost within gunshot of me, kill it, apparently instantly, from the force of the shock, and fly away with it as easily and without visible struggle as if it had been a sparrow instead of a bird of its own weight."

157. Falco columbarius columbarius (*Linn.*). PIGEON HAWK.

Description.—Adult male bluish gray above; adult female and young brownish above; tail barred with black above in male, with lighter in female and young. Underparts whitish or buffy, streaked with dusky. L., 11.00 to 13.00; W., 7.30 to 8.30; T., 5.00 to 6.00.
Range.—Whole of North America, breeding mainly north of the United States.
Range in North Carolina.—Known only as an occasional transient at Raleigh and in Buncombe County.

The Pigeon Hawk appears to be a rare transient in this State, our only records being October 1, 1886; April 21 and 23, 1888; April 19, 1902; September 2, 1910; and October 4, 1914, all from Raleigh, a single specimen being taken on each date. Cairns secured a female in Buncombe County on October 19, 1894.

FIG. 134. PIGEON HAWK.

158. **Falco sparverius sparverius** (*Linn.*). SPARROW HAWK.

Description.—Male, back tawny, wings bluish and black, tail chestnut with a broad black band near tip, below whitish or tawny. Female with back and wing-coverts rusty, barred with black; tail tawny, with several black bars. L., 10.00; W., 7.25; T., 4.75.
Range.—North and South America.
Range in North Carolina.—Whole State, apparently resident.

FIG. 135. SPARROW HAWK.

The handsome little Sparrow Hawk is a common bird throughout the State and occurs at all seasons, but appears to be much less in evidence during the summer months. Cairns stated that in Buncombe County it bred in April and May. Pearson found a nest with four eggs May 10, 1902, at Greensboro. This was in the hollow of a living oak tree, near the Greensboro Female College and within fifteen feet of a railway. He also recorded a nest found at Chapel Hill in May, 1898, which held three fresh eggs. C. S. Brimley on May 31, 1913, saw a pair apparently nesting in the hollow of a dead tree at Sunburst, Haywood County.

Although feeding occasionally on small birds, and more frequently on mice and lizards, it confines itself mainly to insects, especially the easily procured grasshoppers.

1. One type of Fish Hawk's nest. Great Lake, Craven County. Built in a small cypress, at a low elevation.
(Photo by H. H. Brimley.)

2. A very neat, symmetrical Fish Hawk's nest, also on Great Lake. Old bird just alighting on nest. As the bird is about two feet in length, with a wing spread of about five feet, some idea of the size of the nest may be gathered.
(Photo by H. H. Brimley.)

This bird nests in hollow trees, using little if any lining to the hole. The eggs are four or five in number, of a creamy white ground-color, variously marked with different shades of brown. Size 1.38 x 1.11.

32. FAMILY PANDIONIDÆ. OSPREYS

Genus Pandion (Sav.)

159. Pandion haliætus carolinensis (*Gmel.*). OSPREY.

Description.—Dark brown above, tail grayish with narrow black bars; head, neck, and lower parts mostly white; sides of head with a dark stripe; female with breast more heavily spotted than male. L., 23.00; W., 18.00; T., 8.50. Extent of wings about 5 ft.
Range.—North and South America.
Range in North Carolina.—Whole State in summer, common on the coast, rare elsewhere.

The Osprey or Fish Hawk is a common bird along our coast, but inland appears to be only a transient, occurring at Raleigh from late March to early May, and also in August. Cairns recorded it from Buncombe County in April, and Pearson from Guilford County in May, 1900.

Along our coast-line, where water conditions are favorable, the Osprey breeds plentifully. While a number of scattered nests have come under our observation, two bodies of water stand out preëminently as nesting places for this bird. Around the borders of Great Lake, in Craven County, twenty-five or thirty pairs annually rear their young. On the rice reserve pond on the Orton plantation, in Brunswick County, there is another colony of not less than thirty-five pairs of breeding birds.

At one end of Orton pond are many stumps and dead cypress trunks. Some of these are mere shells, for standing cypress wood will withstand more years of weather than any one man can remember. On these stumps are placed many of the Osprey nests. A few are so low that the contents may be seen by standing in a boat. More are from eight to twenty feet above the water, and a few of those on the shore-line are as high as thirty feet or over. A few are found on living cypresses, either standing in the water or on shore.

On Great Lake the nests are nearly all placed in cypresses standing in the water. One is in a pine on shore. Of the hundred and more Osprey nests observed by us in North Carolina during the past few years, probably nine-tenths were built over the water. In fact, this seems to be always the case where the birds nest in colonies. The trees chosen sometimes stand back a half mile or more from water, but in such instances there appears never to be more than one nest in a neighborhood.

The nests are enormous structures, added to from year to year until some of them look as if they would fill the body of an ordinary farm cart. The Osprey is a rather early nester, the young often being hatched late in April or in early May.

The diet of this bird is exclusively fish at all seasons of the year. Its food during the nesting period seems to consist principally of menhaden, which the old birds in many instances must travel at least ten miles to catch. When fishing, the Osprey hovers for a moment and then darts downward with a headlong plunge that throws the spray high in air. The fish is always carried head first in the talons of the bird. The Bald Eagle often appears and takes without apology or explanation the captured fish.

Fig. 136. Osprey.

A curious habit of the Osprey is that of "foot-washing." From flapping in wide circles over the lake a bird may be seen suddenly to half close its wings and glide toward the water in a long, gentle sweep. When almost touching the surface, the feet are dropped to the full extent of the long legs and a horizontal flight of fifteen or twenty yards follows, while the feet drag in the water. The reason for this action is doubtless to cleanse the toes and claws of the fish-slime that must necessarily accumulate on them.

33. FAMILY ALUCONIDÆ. BARN OWLS

Genus Aluco (Flem.)

160. Aluco pratincola (*Bonap.*). Barn Owl.

Description.—Various shades of tawny, very finely mottled, dotted and streaked with darker; underparts white or light tawny with some spotting. L., 18.00; W., 13.25; T., 5.75. Known from our other owls by the long face and nearly naked legs.

Range.—United States and Mexico.

Range in North Carolina.—Known to occur from Davidson County to the coast.

Fig. 137. Barn Owl.

The Barn Owl, also known as "Monkey-faced Owl," does not seem to be a common bird in any part of the State, and so far we have records of its occurrence only from Davidson, Alamance, Wake, Craven, Carteret, Cumberland, Brunswick, Pamlico, Guilford, Randolph, Bladen, and Dare counties. Nearly all the specimens were taken in winter, the only exceptions being one caught at Thomasville in June, 1910; one killed at New Bern, March 12, 1912; and one caught alive in a steel trap in Bladen County, March 14, 1902. All three were sent to the State Museum. In spite of this lack of information, there is little doubt that it is a permanent

resident in North Carolina, as it is known to breed to the north and south of us. Pearson found a nest with four eggs in a rice mill on Cat Island, South Carolina, April 1, 1907 (*Auk*, Vol. 25, p. 316).

The food of this owl consists almost entirely of various rats and mice, as well as other small animals, and much more rarely of small birds. In common with other owls, it hunts at night and its flight is noiseless, thus enabling it to approach its prey with ease.

It nests in hollow trees, the belfries of churches, seldom used towers, and in similar places. The eggs are pure white, unmarked, and are usually from five to seven in number.

This is a most interesting and harmless owl, and deserves to be protected on account of its services in destroying rats and mice; instead of which it is usually shot on sight as a curiosity.

34. FAMILY STRIGIDÆ. OWLS

This family contains most of the owls. The representatives possess large, round heads, with comparatively short faces, surrounded by a more or less complete disk of radiating feathers. Most of the species are strictly nocturnal, though a few hunt their prey in the daytime.

KEY TO GENERA

1. Eye in the center of a nearly complete circular disk of feathers; external ear larger then eye. See 2.
1. Eye nearer top than bottom of more or less incomplete disk; external ear not larger than eye; eyes yellow. See 4.
2. Ear-tufts present, sometimes very short; cere longer than rest of culmen; eyes yellow. *Asio.*
2. Ear-tufts not evident; cere short. See 3.
3. Wing 12 or more; eyes dark brown. *Strix.*
3. Wing less than 8; eyes yellow. *Cryptoglaux.*
4. Head without distinct ear-tufts, plumage chiefly white. *Nyctea.*
4. Head with conspicuous ear-tufts. See 5.
5. Length about 22. *Bubo.*
5. Length about 10. *Otus.*

Genus Asio (Briss.)

This genus is composed of owls with more or less developed ear-tufts, and with the external ears enormously large. The ear-tufts are near together on each side of the base of the bill, instead of being far apart on the outer side of the head, as in the Great Horned Owl and Screech Owl.

KEY TO SPECIES

1. Ear-tufts conspicuous; color darker, barred and striped below. *Long-eared Owl.*
1. Ear-tufts rudimentary; color lighter, striped below. *Short-eared Owl.*

161. Asio wilsonianus (*Less.*). LONG-EARED OWL.

Description.—Dusky, more or less mottled and streaked with buffy and grayish; much variegated below. L., 14.00; W., 12.00; T., 6.00.

Range.—Temperate North America, breeding from Virginia northward.

Range in North Carolina.—Probably entire State, but so far only known from Wake, Guilford and Buncombe counties in winter.

The Long-eared Owl, which in general appearance somewhat suggests a small Great Horned Owl, has been taken at Raleigh in various years in December and January. On February 24, 1910, a specimen, with sexual organs well developed, was shot at Caraleigh Mills, Wake County. As this species breeds in March, and is said to be wholly nocturnal and very quiet and unobtrusive, it is quite possible that it is a rare summer resident with us.

FIG. 138. LONG-EARED OWL.

We have only two other records from the State. One was a bird taken by Cairns near Asheville in November, 1889, and the second was brought to Pearson by a farmer at Greensboro in December, 1901.

This species, unlike most owls, does not nest in hollow trees, but in the disused nests of crows or hawks, which it repairs and lines afresh. The eggs are white, like those of all owls, and are usually from three to six in number.

162. Asio flammeus (*Pont.*). SHORT-EARED OWL.

Description.—Buffy whitish, striped with dark brown, the stripes narrower below. L., 15.00; W., 12.00; T., 6.25.
Range.—Nearly the whole world, except Australia.
Range in North Carolina.—Whole State in winter.

The Short-eared Owl is not infrequently met with in our State in winter, a number of specimens having been taken from early November to February, in the counties of Buncombe, Carteret, Craven, Guilford, and Wake.

This species is especially fond of field rats and mice, and consequently, unlike most owls, it frequents open fields, meadows, and marshes rather than dense woods.

It is not exclusively nocturnal, and on cloudy days may often be found abroad. It roosts on the ground.

On account of the number of rats and mice which it destroys it is well worthy of the fullest protection.

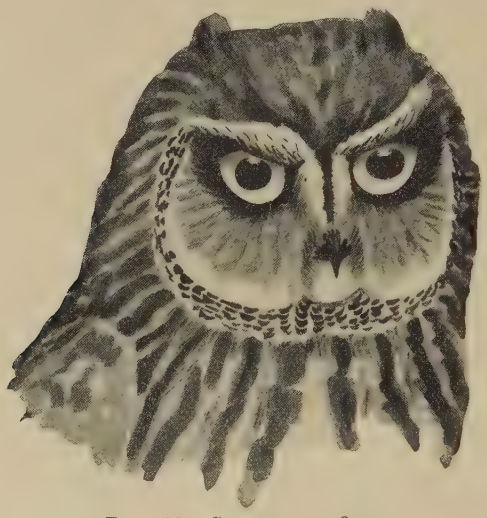


FIG. 139. SHORT-EARED OWL.

Genus Strix (Linn.)

163. Strix varia varia (*Barton*). BARRED OWL; "HOOT OWL."

Description.—Olive brown, barred with whitish above; breast barred, belly streaked. L., 19.00; W., 13.00; T., 8.50.
Range.—Eastern North America.
Range in North Carolina.—Whole State at all seasons.

The Barred Owl is a common resident throughout the State, and early in spring before nesting begins, it may frequently be heard hooting even in the daytime. It becomes quite noisy again later in the year when the young have left the nest. Its favorite haunts are wooded lowlands.

The eggs are laid in the hollows of trees, no nest being constructed. The nesting season at Raleigh appears to be in March or early April. The eggs are usually two in number, and, like all owl's eggs, are pure white.

Like most species of hawks and owls, it feeds mainly on various kinds of rats and mice, occasionally killing birds, and still less often robbing the farmer's poultry-yard. However, as farmers generally keep their chickens under cover at night, the hen roost is seldom disturbed by the Barred Owl.

It is probable that the owls of this species found in summer in the southeastern part of the State may, upon closer study, prove to be the southern variety known as the Florida Barred Owl, *Strix varia alleni* (Ridgw.).

FIG. 140. BARRED OWL.

Genus Cryptoglaux (Richm.)

164. Cryptoglaux acadica acadica (*Gmel.*). SAW-WHET OWL.

Description.—Brown above, more or less spotted with white; white below, striped with brown. L., 8.00; W., 5.50; T., 3.00.
Range.—Northern North America, south in winter to the Carolinas and Louisiana.
Range in North Carolina.—So far, only taken in Wake and Craven counties, but probably occurs sparingly throughout the State in winter.

The Saw-whet Owl, which on account of its small size cannot be confounded with any other species, has been taken at Raleigh on three occasions, viz., December 18, 1894; December 4, 1897, and early in December, 1910. A mounted specimen, said to have been taken in Craven County, was exhibited at the New Bern Fish and Oyster Fair in February, 1892.

Genus Otus (Penn.)

165. Otus asio asio (*Linn.*). SCREECH OWL.

Description.—Grayish, much streaked and barred, or else with the gray replaced by bright rufous, the two color phases bearing no relation to age, sex, or season. L., 9.00; W., 6.25; T., 3.00.
Range.—Eastern North America.
Range in North Carolina.—Whole State at all seasons.

The Screech Owl is undoubtedly our most abundant representative of the owl family, and is an interesting little creature at all times. In summer, when drowsing away the daytime in a thicket, it is not infrequently discovered by some inquisitive

small bird, which at once notifies all the birds in the neighborhood, and soon we may find titmice, wrens, vireos, warblers, and jays gathered about it and displaying great excitement by their actions and cries. On such occasions, the Screech Owl frequently sits for a time apparently unmoved, with head stretched upward and feathers drawn tightly against its body, presenting on the whole a most unbird-like appearance. It does not seem to see well in the daylight, and its flight is then always uncertain, and merely to take it to a fresh place of refuge.

Every one who learns "the noises of the night" knows its quavering, shivering cry, which may be heard even in our most populous towns. This species nests in hollow trees or stumps, often appropriating the disused nest of the Flicker. The eggs vary from three to five in number, and are deposited usually in April.

The food of the Screech Owl consists in part of rats and mice. It will, however, occasionally kill birds, even those larger than itself.

As we have collected no specimens of this species in the lower coast counties, we have been unable to determine the character of the birds found there. They are, perhaps, Florida Screech Owls, *Otus asio floridanus* (Ridgw.).

Genus Bubo (Dumeril)

166. Bubo virginianus virginianus (*Gmel.*). GREAT HORNED OWL.

Description: Ads.—Size large; ear-tufts conspicuous, nearly two inches in length; upperparts mottled with varying shades of ochraceous-buff and black; facial disk ochraceous-buff; ear-tufts black and ochraceous-buff; a white patch on the throat, rest of the underparts ochraceous-buff, barred with black; legs and feet feathered; eyes yellow. ♂ L., 22.00; W., 15.00; T., 8.50; B., 1.60. (Chap., *Birds of E. N. A.*)

Range (including subspecies).—Greater part of North and South America.

Range in North Carolina.—Whole State at all seasons.

This, the largest and fiercest of our owls, is found in all parts of North Carolina. Being of a wary nature, and capable of seeing well in the daytime, it is not very often that it allows one the privilege of a near approach.

It seems a pity that so handsome a bird should have such a thoroughly bad reputation. It preys indiscriminately on many forms of wild life, such as rabbits, grouse, partridges, and even turkeys. Chickens roosting in trees at times fall victims to its rapacity, and it has been recorded that where food is plentiful it often eats only the heads of its victims. Scarcely any bird or animal of its own weight is safe from this nocturnal woodland hunter. Keen of sight, powerful of bill and talon, and with a wonderful courage, the Great Horned Owl noiselessly hunts the open glades and woodland fastnesses as twilight drops over the land. Even the beautiful but odorous skunk is not safe from this owl's rapacity. Dr. C. Hart Merriam states: "I have known one to kill and decapitate three turkeys and several hens in a single night." Dr. P. R. Hoy (extract from quotation) in Fisher's *Hawks and Owls of the United States* says: "The specimen in the collection of the Academy was known to carry off from one farm, in the space of a month, not less than twenty-seven individuals of various kinds of poultry before it was shot."

Sometimes a pigeon house will be selected and a heavy toll levied on the inmates before the destroyer can be captured. Rabbits, however, seem to be its favorite food, and large numbers must be destroyed where these owls are plentiful.

SCREECH OWL. Otus asio asio (Linn.) Red and gray phases.

The male is smaller than the female, and is occasionally killed and eaten by her.

The Great Horned Owl nests in hollow trees, or, as is often the case, in the old nest of hawks or eagles. The eggs are two or three in number, pure white, and in this State are usually laid in February. Size 2.25 x 1.90. On January 21, 1899,

Fig. 141. Great Horned Owl.

Pearson secured from a gunner at Chapel Hill a freshly killed female Great Horned Owl which, upon examination, was found to contain two well-developed, ovarian eggs.

Because of its large yellow eyes and conspicuous ear-tufts, it is sometimes known as the "Cat Owl."

Genus Nyctea (Steph.)

167. Nyctea nyctea (*Linn.*). SNOWY OWL.

Description.—Pure white, more or less barred with dusky, the markings much more extensive in the female. L., 23.00 to 27.00; W., 17.25 to 18.75; T., 9.75 to 10.25.

Range.—Northern parts of Northern Hemisphere, in winter straggling to North Carolina Louisiana, etc.

Range in North Carolina.—Occasional in winter in all parts of the State.

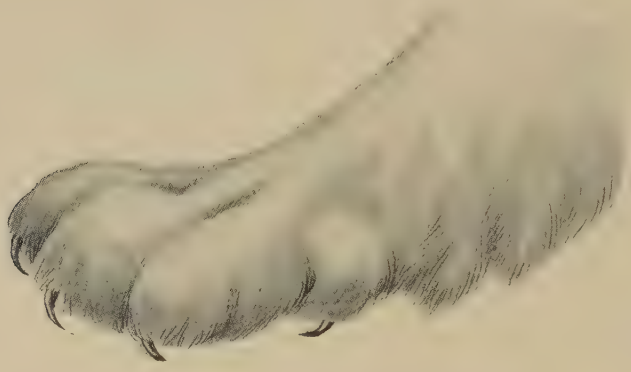


FIG. 142. FOOT OF A SNOWY OWL.

The beautiful Snowy Owl is only a very irregular winter visitor with us; still, we have records of its occurrence in all three divisions of the State. In the eastern section, one was taken on December 4, 1897, by W. E. Stone in Hyde County, and is now in the State Museum at Raleigh. A second specimen in the Museum came from Granville County, in the middle section, and was captured on January 7, 1902. Another was taken in Nash County in late November, 1909, and in 1894 there was a mounted specimen in a barroom in Greensboro that had been shot in Guilford County during the previous winter. We have Cairns's statement that he had often heard of these owls being seen not far from Weaverville, in the mountains, and once had personally observed one.

Though appearing larger than the Great Horned Owl, it is really a smaller bodied bird. It is a keen, persistent hunter, and destroys many small birds and mammals. As the principal home of this bird is in far northern latitudes, we need have little fear of its depredations.

THE CAROLINA PAROQUET, *Conuropsis carolinensis* (*Linn.*), was once found in great numbers in North Carolina. We have no definite records of its occurring here, however, since Catesby's record in 1731 (*Natural History of Carolina, Florida, and the Bahama Islands*). It was last noted from South Carolina in 1851, and there is a West Tennessee record as late as 1876. Formerly it wandered over the State in flocks, feeding upon the seeds of the cockle-burr, thistle, and other plants.

The Carolina Paroquet belongs to the order *Psittaci*—parrots.

XIII. ORDER COCCYGES. CUCKOOS, KINGFISHERS, ETC.

This order is composed of a number of quite diverse families, mostly with the toes either two in front and two behind, or with the outer and middle toes united for half their length.

KEY TO FAMILIES

1. Toes 2 in front, 2 behind. The Cuckoos (*Family Cuculidæ*).
1. Toes 3 in front, 1 behind, the outer and middle toes united for half their length; head crested. Kingfishers (*Family Alcedinidæ*).

35. FAMILY CUCULIDÆ. CUCKOOS

These are birds with the toes two in front and two behind. Many of the species have more or less abnormal nesting habits, the European Cuckoo (*Cuculus canorus*) laying its eggs in the nests of other birds, like our Cowbird, while in the case of some other species, several birds build one large nest in which to lay their eggs.

KEY TO GENERA

1. Bill almost as high as long; plumage black. *Crotophaga.*
1. Bill more than twice as long as high; plumage brownish. *Coccyzus.*

Genus Crotophaga (Linn.)

168. Crotophaga ani (*Linn.*). THE ANI.

Description.—Entirely black, bluish reflections on wings and tail. Bill very heavy, nearly as high as long. L., 12.00 to 15.00; W., 5.50 to 6.00; T., 7.50 to 8.25.
Range.—West Indies and Eastern South America, rare in Louisiana and southern Florida. Occasionally accidental farther north.
Range in North Carolina.—Once taken near Edenton.

The Ani, Black Witch, or Savannah Blackbird, obtains a place in this catalogue through one having been taken near Edenton, August 23, 1866, and donated to the Philadelphia Academy of Natural Science, where the specimen is still in existence. (W. W. Cooke, in letter of June 29, 1908.)

This species has the curious habit of several females uniting to build a common nest in which all their eggs are laid together.

Genus Coccyzus (Vieill.)

This comprises species with a slender, gently decurved bill, long wings, and a long, graduated tail.

KEY TO SPECIES

1. Tail-feathers, except middle pair, mostly black, broadly tipped with white; basal half of lower mandible yellow. *Yellow-billed Cuckoo.*
1. Tail-feathers grayish brown, except middle pair, narrowly tipped with white. No yellow on bill. *Black-billed Cuckoo.*

169. Coccyzus americanus americanus (*Linn.*). YELLOW-BILLED CUCKOO.

Description: Ads.—Upperparts brownish gray with slight greenish gloss; most of the wing-feathers *rufous*, except at the tip; outer tail-feathers *black*, conspicuously tipped with white, which extends down the outer vane of the outer feather; underparts dull whitish; bill black, the lower mandible *yellow* except at the tip. L., 12.20; W., 5.70; T., 6.20; B. from N., .76. (Chap., *Birds of E. N. A.*)
Range.—Eastern North America, winters in South America.
Range in North Carolina.—Whole State in summer.

The Yellow-billed Cuckoo, more commonly known as "Rain-crow," is a common summer resident throughout the State, arriving late in April or early in May. Some individuals remain until late October.

This is a bird much better known by sound than sight. Nearly every one has heard the *keow-keow-keow* of the Rain-crow, but few people recognize the long, slim bird that makes the noise, some even attributing the note to a tree-frog. Curiously enough, while the main food of the Cuckoo is insects, it also eats tree-frogs. C. S. Brimley has twice taken individuals that had their head feathers caked with the slimy secretions of the frog. This is also one of the very few birds that eats hairy caterpillars, which most other birds avoid. Pearson once watched a Cuckoo eat nineteen of these in a period of five minutes.

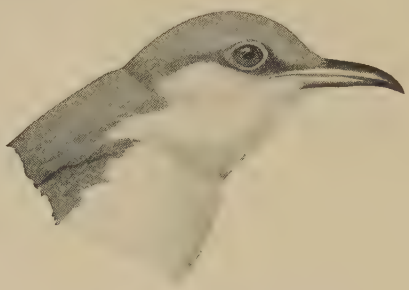


FIG. 143. YELLOW-BILLED CUCKOO.

The nest is a rude platform of twigs, dead leaves, and sometimes moss, placed in a small tree or bush at a height of from five to fifteen feet from the ground. The eggs are two to four in number, and are laid at intervals of from two to five days, so that when the first egg hatches, the nest is often found to contain also an incubated egg, and one that has been but freshly laid. The eggs are glaucous green in color, and average in size 1.27 x .89. The breeding season is from May to August, inclusive.

170. Coccyzus erythrophthalmus (*Wils.*). BLACK-BILLED CUCKOO.

Description: Ads.—Upperparts grayish brown with a slight green gloss; wings and tail the same, the latter narrowly tipped with white; underparts dull white; bill black. L., 11.83; W., 5.50; T., 6.26; B. from N., .74.

Remarks.—This species is to be distinguished from the Yellow-billed Cuckoo chiefly by the absence of rufous in the wings, black in the tail, and yellow in the lower mandible. (Chap., *Birds of E. N. A.*)

Range.—Breeds in the United States from North Carolina northward; winters in South America.

Range in North Carolina.—Whole State in summer, probably breeding wherever found; much scarcer than the Yellow-billed Cuckoo.

The Black-billed Cuckoo, often confused in the popular mind with the preceding species, and likewise called "Rain-crow," does not seem to be as common a bird in the State as the Yellow-billed. In the mountains Cairns recorded it as some years common and others almost wholly absent. At Raleigh it occurs as a rare summer resident. A male was taken there on July 8, 1892, and a female with an egg ready for laying was secured by C. S. Brimley on July 15, 1886. It is quite rare, and has been detected breeding there but once. At Lake Ellis it was common in late May, 1908, but whether the birds were migrants or summer visitors was not deter-

minable. In Bertie County a nest with three eggs was taken by R. P. Smithwick, May 17, 1896. The only specimen which Pearson ever noted at Greensboro was one which flew into his lecture-room at the State Normal and Industrial College, early in May, 1901. After having been captured and positively identified, the bird was given its freedom.

In nesting habits it is similar to the preceding species and the eggs are much like those of the Yellow-billed Cuckoo.

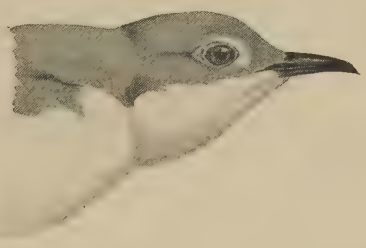


FIG. 144. BLACK-BILLED CUCKOO.

36. FAMILY ALCEDINIDÆ. KINGFISHERS

These are birds with large crested heads, short legs, and with the middle and outer toes usually united for half their length. Most of the species are skillful catchers of fish, and live along streams or about the shores of ponds and lakes.

Genus Ceryle (Boie)

171. Ceryle alcyon alcyon (*Linn.*). BELTED KINGFISHER.

Description.—Ashy blue above, a bluish band across breast, otherwise white below; female with sides and band across lower breast chestnut; tail black, speckled and barred with white. L., 12.50; W., 6.00; T., 3.75.

Range.—North America and northern South America.

Range in North Carolina.—Whole State, resident in middle and eastern sections, apparently only a summer visitor in the mountains.

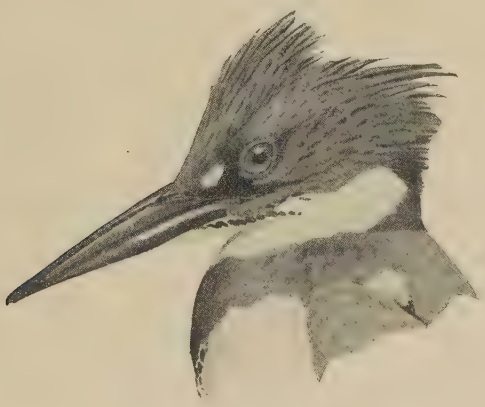


FIG. 145. BELTED KINGFISHER.

FIG. 146. FOOT OF BELTED KINGFISHER.

The Kingfisher is a somewhat common bird wherever open water is found. In the mountains it appears to be only a summer visitor, arriving in late March or early April, transients at that season being known also at Raleigh and Statesville.

As its name implies, it is an ardent lover of fish, in the pursuit of which it plunges headlong into the water. Frequently after such a plunge the bird may be seen sitting on a post hammering its fish against the wood as if to kill, or tear it to pieces. The prey is always carried in the bill.

Kingfishers dig long burrows in the perpendicular banks of streams or ponds, the holes ending in an enlarged chamber in which the eggs are laid. These are pure white in color, and are usually six or seven in number. Size about 1.35 x 1.05. Two sets of eggs taken in Bertie County by Dr. Smithwick were collected respectively on May 7, 1896, and May 13, 1897. A nest containing four decayed eggs was found by Pearson in a railroad cut in Gates County on July 5, 1892. It nests not uncommonly all through the eastern part of the State.

XIV. ORDER PICI. WOODPECKERS, ETC.

37. FAMILY PICIDÆ. WOODPECKERS

This family includes small, medium, or rather large birds, with stiffened and pointed tail-feathers, strong chisel-shaped bills, and the toes of all North Carolina species extend two in front and two behind.

KEY TO GENERA

1. Head crested; size large, wing 7.00 or more. See 2.
1. Head not crested; smaller, wing less than 7.00. See 3.
2. Outer hind toe longer than outer front toe; bill pale. *Campephilus.*
2. Outer hind toe not longer than front toe, bill dark. *Phlœotomus.*
3. Outer hind toe longer than outer front toe. See 4.
3. Outer hind toe not longer than outer front toe. See 5.
4. Nasal groove extending nearly to tip of bill; tongue greatly extensile. *Dryobates.*
4. Nasal groove running out on cutting edge of upper mandible, about halfway to tip; tongue scarcely extensile. *Sphyrapicus.*
5. Under surface of wing-quills and tail-feathers chiefly yellow or reddish, the shafts brighter yellow or red. *Colaptes.*
5. Under surface of wing- and tail-quills not yellow or red. See 6.
6. Back, scapulars, and wings barred with white. *Centurus.*
6. Back, scapulars, and wing-coverts plain. *Melanerpes.*

The Ivory-billed Woodpecker, *Campephilus principalis* (*Linn.*), has not been positively recorded from the State since Alexander Wilson, the father of American ornithology, took a specimen near Wilmington in the early thirties of the nineteenth century (see Introduction). Reports of the bird's occurrence are not infrequent, but they may be relied upon to refer invariably to the Pileated Woodpecker. Coues and Yarrow recorded it doubtfully from Fort Macon in 1876, on the strength of a reported specimen which they had not seen. It is the largest woodpecker occurring in the United States, attaining a length of twenty-one inches and possessing a powerful, long white bill.

Genus Dryobates (Boie)

This genus includes a number of small and medium-sized woodpeckers, the North Carolina species of which are wholly black-and-white in color, except for slight red markings on the head in males or young birds. The underparts are white or whitish, the wings black with numerous white spots, the tail black with some of the outer feathers more or less white.

Three species, two of them represented each by two slightly differing subspecies, occur in this State. These differ in the points noted in the following key. All the species are highly insectivorous, although living to some extent on berries in the winter. In North Carolina they are usually known as "Sapsuckers," which is a misnomer, as none of them partake of sap.

KEY TO SPECIES

1. Back banded transversely with black and white. *Red-cockaded Woodpecker.*
1. Back black, striped longitudinally with white. See 2.
2. Size larger, wing more than 4.25; outer tail-feathers white, not barred with black. See 3.
2. Size smaller, wing less than 4.25; outer tail-feathers white with black bars. See 4.
3. Size larger, wing averaging about 4.75. *Hairy Woodpecker.*
3. Size smaller, wing about 4.50. *Southern Hairy Woodpecker.*
4. Size larger, wing about 3.75, underparts purer white. *Downy Woodpecker.*
4. Size smaller, wing about 3.50, underparts brownish white. *Southern Downy Woodpecker.*

172. Dryobates villosus villosus (*Linn.*). HAIRY WOODPECKER.

Description.—Black above, white below; the back with a long white stripe, the wings with many small roundish white spots, the outer tail-feathers wholly white. Male with red on occiput. L., 9.75; W., 4.75; T., 3.25.

Range.—Eastern United States, mainly north of North Carolina.

Range in North Carolina.—Resident on the higher mountains.

FIG. 147. HAIRY WOODPECKER.

FIG. 148. FOOT OF HAIRY WOODPECKER.

This, which is the common form of the Hairy Woodpecker in the Northern and Middle States, is found in North Carolina only on the higher mountains. Cairns recorded it as breeding on Craggy Mountain in Buncombe County.

173. Dryobates villosus auduboni (*Swains.*). SOUTHERN HAIRY WOODPECKER.

Description.—Similar to preceding, but somewhat smaller and darker. Extreme measurements of 45 Raleigh specimens: L., 8.25 to 9.12; W., 4.40 to 4.75; T., 2.50 to 3.12.

Range.—Southern United States, from southern Virginia southward.

Range in North Carolina.—Whole State, except the higher mountains; resident throughout the year.

The Southern Hairy Woodpecker, which only differs slightly from the preceding, is the more southern form of the Hairy Woodpecker, and is not uncommon throughout the State. It is mostly found in wooded lowgrounds, and is one of the shyest of the woodpeckers.

Like the preceding form, the male has a red patch on the back of the head, which is absent in the female, while young birds in the first plumage have considerable red on the top of the head, which, however, disappears with the fall moult.

The eggs are pure white, like those of all woodpeckers, and are laid in hollows dug by the bird in the limbs or trunks of dead trees. Cairns stated that in the mountains it is common up to 2,500 feet elevation and breeds in April.

174. Dryobates pubescens pubescens (*Linn.*). SOUTHERN DOWNY WOODPECKER.

Description.—Smaller than the Hairy Woodpecker, which it resembles in general appearance, but with the outer tail-feathers white, barred with black. L., 6.00; W., 3.50; T., 2.75.
Range.—About the same as that of the Southern Hairy Woodpecker.
Range in North Carolina.—Whole State, except the higher mountains; resident.

The Southern Downy Woodpecker, which differs only from the Downy Woodpecker in slightly smaller size, and less purely white underparts, is quite common in all wooded localities throughout the State, except on the higher mountains, where it is replaced by the next form. It is often found haunting apple orchards and the trees on lawns.

Like the Hairy Woodpeckers, it subsists mainly on insects, of which it must consume, in the course of a year, a very appreciable number of wood-destroying species, and consequently should always be protected. In winter it eats many berries.

Although this is the species which is most commonly known as "Sapsucker" throughout the State, it does not suck or eat sap, nor in fact do any of our woodpeckers, except those of the genus *Sphyrapicus*. The eggs are usually laid in May.

175. Dryobates pubescens medianus (*Swains.*). DOWNY WOODPECKER.

Description.—Similar to the preceding, but averaging slightly larger, and with the underparts purer white.
Range.—Eastern North America, mainly north of North Carolina.
Range in North Carolina.—The higher mountains only; resident.

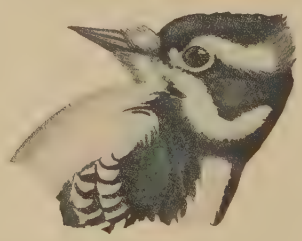


FIG. 149. DOWNY WOODPECKER.

In superficial appearance very similar to the preceding. So far as known, it has been recorded in this State only from Buncombe County.

176. Dryobates borealis (*Vieill.*). RED-COCKADED WOODPECKER.

Description.—Back barred transversely with black and white; sides spotted with black; a large white patch on each side of head, which is very conspicuous and characteristic in life; male with a little red patch on each side of head. L., 8.40; W., 4.60; T., 3.70.

RED-COCKADED WOODPECKER. Dryobates borealis (Vieill.) Male and Female.

Range.—Southern States, from North Carolina southward.
Range in North Carolina.—Eastern portion of the State, mainly east and south of a line drawn from Norfolk, Va., to Raleigh, and thence to Charlotte.

The Red-cockaded Woodpecker, intermediate in size between the Hairy and Downy Woodpeckers, is an abundant bird in the pine woods of the Lower Austral region in this State. So far it has been noted only in Bertie, Carteret, Craven, Brunswick, Bladen, Moore, New Hanover, Currituck, and Wake counties. In the last named county it seems to be merely a straggler, only four specimens having been observed in thirty years of observation. A. L. Feild reports it also from Chapel Hill, in March and April, 1909.

This species, when about to nest, excavates a hole in a living pine tree. All around the tree for two or three feet above the entrance, and for a distance fully as great beneath it, the birds make numerous punctures through the bark, from which the resin flows and forms a sticky mass over the entire area. This makes a conspicuous mark, and the tree containing a nest may often be noticed by this means at a distance of two or three hundred yards in the open pine woods. While the purpose of this custom is not known, it may be reasonably asserted that the nest is thus effectually guarded from the inroads of ants and squirrels. Our only North Carolina record of eggs of this species comes from Bertie County, where a set of four was taken by Smithwick, April 29, 1897. Pearson has found occupied nests in New Hanover and Brunswick counties, but did not cut the holes out to examine the contents.

These woodpeckers are often found in small troops, possibly formed of the parents and their brood. They frequent mainly the upper branches and terminal twigs of pine trees.

Genus Sphyrapicus (Baird)

177. Sphyrapicus varius varius (*Linn.*). YELLOW-BELLIED SAPSUCKER.

Description.—Upperparts black, varied with white; belly yellowish; crown, red in male and usually in female; throat and chin red in male, white in female; a black patch on breast in both sexes. *Im.*—Brownish, much mottled, the markings of the adults but little indicated. L., 8.75; W., 4.90; T., 3.25.
Range.—Eastern North America, wintering from Southern States to Central America.
Range in North Carolina.—Whole State in winter, breeds in the mountain region.

The Yellow-bellied Sapsucker is a common winter resident throughout the greater portion of the State, occurring from September to late April or early May. Our summer records come from Highlands, Macon County, where the birds were observed breeding by Brewster in 1885, and mentioned as breeding by Huger in 1910; Roan Mountain, Mitchell County, a breeding pair observed by Rhoads on June 18, 1895; Joanna Bald Mountain, Cherokee County, a breeding pair seen by C. S. Brimley and Sherman, May 14, 1908; Buncombe County, recorded by Cairns as breeding on the higher mountains, and by Pearson, who found an immature bird on Graybeard Mountain, Buncombe County, in July, 1903.

Their nesting season is May and June. Five to seven eggs are said to be laid. Their general breeding habits are similar to those of other woodpeckers, and the holes they dig for nests are usually in dead trees.

This is the only woodpecker which is permanently injurious to trees, it being very fond of the sap and tender inner bark. It will dig many little holes through the bark, running them around the trunk one above the other. Pearson counted over 1,600 of these miniature excavations in the trunk of a small "she balsam" on the campus of Guilford College. The trees which they seem to attack most commonly are the white pine, apple, and black gum. In winter they subsist mainly on berries, such as those of the dogwood, frost grape, and holly.

FIG. 150. YELLOW-BELLIED SAPSUCKER.

They appear to be the least shy of any of our woodpeckers. On the other hand, they are much less noisy, both in their cries and while at work pecking in the bark, and thus easily escape detection by the casual observer.

Bendire, in *Life Histories of North American Birds*, writes of this bird: "None of our woodpeckers are more noisy and boisterous than this species." This may be correct in reference to them when on their northern breeding grounds, but it certainly is not true of the birds as usually observed in North Carolina.

Genus Phlœotomus (C. & H.)

178. Phlœotomus pileatus (*Linn.*). PILEATED WOODPECKER.

Description.—Black; a white stripe down neck; whole top of head and crest, and a patch on cheeks, red in male, but only crest red in female. In color distinguished from the Ivory-billed Woodpecker by the lack of white on the scapulars (shoulders), and by the general color being dull black instead of glossy black. L., 17.00; W., 9.00; T., 6.25.

Range (including subspecies).—Whole of North America.

Range in North Carolina.—Heavily wooded districts throughout the State; resident.

According to the American Ornithologist's Check List, two subspecies of the Pileated Woodpecker are liable to occur in North Carolina, as follows:

1. Pileated Woodpecker, *Phlœotomus pileatus pileatus* (Linn.). More sooty black in color, with the white markings less extensive; size smaller, wing about 9.00 or less. Southern States from North Carolina southward.

2. Northern Pileated Woodpecker, *Phlœotomus pileatus abieticola* (Bangs). Color more brownish black, white markings more extensive, size larger, wing about 9.25. British America, extending south in the southern Alleghanies.

The former subspecies is the bird found throughout the State, and the one to which the measurements given under the head of the species belong, while the latter may possibly occur on the higher mountains.

The Pileated Woodpecker, commonly known in this State as the Logcock, or Woodcock, and occasionally called "Good-god," is still a fairly common bird throughout North Carolina in all heavily wooded regions, and is found sparingly even in Wake County, one of the most thickly settled parts of the State. Pearson saw it occasionally on the campus of the State University at Chapel Hill fifteen years ago, and records one especially which he watched for some time on November 8, 1899. (*Catalogue of the Birds of Chapel Hill*, page 41.)

It is a wild, shy bird, well able to care for itself and keep out of the way of aggressive and murderous mankind.

Fig. 151. Pileated Woodpecker.

At Lake Ellis, in Craven County, we have not infrequently watched one digging for food in some decayed log, and the blows it would strike on such occasions were terrific. The noise of one at work can often be heard a quarter of a mile or more, and the sound cannot be confounded with that made by any other woodpecker now occurring in the State. Its voice, too, is equally resonant.

The nesting habits are similar to those of other woodpeckers, except that the excavations are often three or four feet in depth. The bird is said to nest generally in living trees, but Pearson found three nests in Guilford County, all of which were in dead trees. The eggs are from three to five in a set, white in color, as usual in the family. Size about 1.25 x .95.

The food of this bird consists of insects (many of them the larvæ of wood-boring beetles), varied with berries in fall and winter.

Genus Melanerpes (Swains.)

179. Melanerpes erythrocephalus (*Linn.*). RED-HEADED WOODPECKER.

Description.—Whole head and neck red in adult; belly, rump, and secondaries white; rest of plumage glossy black. Young with the red and black replaced by brownish gray, and secondaries barred with black. L., 9.50; W., 5.50; T., 3.25.

Range.—United States, east of the Rocky Mountains.

Range in North Carolina.—Whole State at all seasons.

FIG. 152. RED-HEADED WOODPECKER.

The Red-headed Woodpecker is a common bird in North Carolina, its abundance seeming to depend, however, on local conditions. In Wake County, for instance, it appears to be quite common in the city of Raleigh, wherever there are groves of oak trees, as acorns furnish a considerable part of its food. It also feeds on insects, which it digs from rotten wood or catches on the wing. Corn in the silk, and various kinds of fruit, are also eaten. Bendire, in *Life Histories of North American Birds*, says that it eats both the eggs and young of small birds, and quotes many instances in support of this statement.

Its nesting habits are those common to the members of the family, the hole being dug in a dead tree or limb, or even in a telegraph or telephone pole or flag-pole. A pair made their nest in the ball on the top of the flagstaff on the State Capitol some years ago.

Genus Centurus (Swains.)

180. Centurus carolinus (*Linn.*). RED-BELLIED WOODPECKER.

Description: Ad. ♂.—Whole top of head and back of the neck bright scarlet; back regularly barred with black and white; primaries black at the end, white, irregularly barred with black, at the base; secondaries black, regularly spotted and barred with white; upper tail-coverts white, with streaks or arrowheads of black; outer tail-feathers and inner vanes of the middle ones irregularly marked with broken black and white bars; cheeks and underparts dull ashy white, the region about the base of the bill, the middle of the belly, and sometimes the breast, more or less tinged with red. *Ad.* ♀.—Similar, but with the crown grayish ashy, the scarlet confined to the nape and nostrils. *Im.*—Similar, but with the belly sometimes tinged with buffy instead of red. L., 9.50; W., 5.00; T., 3.40; B., 1.10. (Chap., *Birds of E. N. A.*)

Range.—United States, east of Rocky Mountains.

Range in North Carolina.—Whole State at all seasons, but local.

The Red-bellied Woodpecker seems to occur in this State most commonly in tall timber in the neighborhood of water, but definite data on the subject are largely lacking. We have enough, however, to know that it occurs in all sections and at all seasons.

In winter it feeds freely on small acorns, and seems also to be quite fond of beechnuts. Pearson has frequently seen them feeding on oranges in Florida, and mentions that they are also very fond of the large Scotch mulberry.

181. Colaptes auratus (*Linn.*). Flicker.

Description.—Head ashy with a red nuchal crescent; rump white, rest of upperparts brownish, barred with black; lower parts pinkish brown, shading into yellow, a black crescent across breast, underparts back of the black crescent thickly spotted with round black spots. Shafts and under surface of quills golden yellow. Male with a broad black stripe on each side of the throat from the base of the bill. L., 12.25; W., 6.25; T., 4.50.

Range (including subspecies).—Eastern North America, west to Great Plains.

Range in North Carolina.—Whole State at all seasons.

Fig. 153. Flicker.

The Flicker is now separated into two subspecies, both of which presumably occur in the State. These are:

1. Flicker, *Colaptes auratus auratus* (Linn.). Smaller with relatively longer bill, wing less than 6.00, tail less than 4.00. Colors darker, less yellow below and more black spotting. Breeds from North Carolina southward.

2. Northern Flicker, *Colaptes auratus luteus* (Bangs). Larger with relatively shorter bill; wing over 6.00, tail over 4.00. Colors lighter, more yellow below and less black. Breeds from North Carolina northward.

The first form would include our breeding birds from the coast to Raleigh or perhaps even farther west, while the second form would take in the breeding birds of the mountains and the bulk of those that winter in the State.

The Flicker, almost universally known in this State by the local name, "Yellow-hammer," occurs in all portions of North Carolina throughout the year, but is much more common in the migrations during October and March.

Flickers feed very largely on the ground, often in company with birds of other species. Their food consists to a large extent of ants, which they dig from the

earth with their slightly curved bills. In the fall they feed much on berries, such as those of the black gum, dogwood, frost grape, etc., while in winter they fairly swarm in the peanut fields. In the fall, when eating gum-berries, they may be seen, two or more at a time in the same tree, bowing and bobbing their heads at one another, frequently doing this so completely in unison that it looks as if they might be worked by machinery. At the same time they utter a series of notes which suggest the words *whicker-whicker-whicker*.

Although common, the Flicker is quite shy, and seems to know just how far an ordinary gun will carry. This knowledge is good for the bird and for mankind also, as the Flicker does not seem to have any objectionable traits to offset its undeniably good ones. At Cape Hatteras it is known as "Wilcrissen."

Eggs have been taken at Raleigh and in Bertie and Beaufort counties from April 24 to May 15, the sets containing from four to eight. The nesting cavities are dug by the birds themselves in dead trees, or dead limbs of living ones, at heights varying from 12 to 30 feet. Eggs pure white, size about 1.10 x .85.

XV. ORDER MACROCHIRES. GOATSUCKERS, SWIFTS, AND HUMMINGBIRDS

KEY TO FAMILIES

1. Bill long, gape short, size small. *Trochilidæ*, Hummingbirds.
1. Bill short, gape very deep. See 2.
2. Middle toe longer than side toes, plumage soft, varied; gape with bristles. *Caprimulgidæ*, Goatsuckers.
2. Middle toe scarcely longer than side toes, plumage compact, its color uniform. No bristles at gape. *Micropodidæ*, Swifts.

38. FAMILY CAPRIMULGIDÆ. GOATSUCKERS

The birds of this family agree in having the plumage soft, and colors varied, the gape very wide and deep, and usually furnished with long bristles. The toes are slightly webbed at base, and the middle claw is pectinate. The species are mainly insectivorous, though some of the larger kinds occasionally eat small birds. They are nocturnal or crepuscular, and in many ways seem related to the owls, with which they have been associated by some ornithologists. Their handsomely marked eggs are deposited on the ground.

KEY TO GENERA

1. Bristles at gape very long; tail rounded. *Antrostomus.*
1. Bristles at gape inconspicuous; tail emarginate. *Chordeiles.*

Genus Antrostomus (Bonap.)

KEY TO SPECIES

1. Bristles at gape with side branches; color redder; size larger, wing over 7.50. Chuck-will's-widow.
1. Bristles at gape simple; color grayer; size smaller, wing less than 7.00. Whip-poor-will.

182. Antrostomus carolinensis (*Gmel.*). CHUCK-WILL'S-WIDOW.

Description: Ad. male.—Upperparts streaked with black and finely mottled with ochraceous-buff and black; primaries black, with broken rufous bars; tail mottled with black and ochraceous-buff, the end half of all but the two middle feathers white, more or less washed with buffy on the inner vane; underparts mottled with black, ochraceous, and cream-buff; an imperfect whitish band across the upper breast; base of the bill beset with long, stiffened bristles, the basal half of these bristles grown with hairlike branches. *Ad. female.*—Similar, but with no white patches in the tail, the upper breast with an ochraceous-buff instead of white band. L., 12.00; W., 8.50; T., 6.00; B., .40. (Chap., *Birds of E. N. A.*)

Range.—South Atlantic and Gulf States, north to southern Illinois.

Range in North Carolina.—Lower Austral region of State, ranging inland as far at least as Raleigh and Chapel Hill.

FIG. 154. CHUCK-WILL'S-WIDOW.

The Chuck-will's-widow is a common bird in all the Lower Austral region of the State, and is one of the most characteristic birds of that region, it replacing the Whip-poor-will in summer over most of the eastern part of the State. At Raleigh it arrives about the end of the third week in April and has been noted as late as September 21. What few dates we have from eastern localities agree with these.

The cry begins with a short *chuck*, followed by a distinct double note, which alone is heard unless one is close enough to distinguish the *chuck*. We have heard people call it the "Will's-widow," apparently from the two notes only.

The bird stays mostly in thick, deep woods, where in May or June it lays its two beautifully marked eggs, on the dead leaves, in some secluded spot. They are pinkish buff, marbled and spotted with various shades of olive-gray and brown. Size about 1.40 x .97.

Although mainly insectivorous, C. S. Brimley once killed a specimen that had swallowed a Carolina Wren, and Bendire cites several other instances of its bird-eating propensities.

There is a widespread impression that the Chuck-will's-widow is the male Whip-poor-will. Its note is frequently interpreted by negroes as "Chip-fell-out-o'-white-oak" and "Twixt-hell-and-white-oak."

183. Antrostomus vociferus vociferus (*Wils.*). WHIP-POOR-WILL.

Description.—Grayish, very much variegated with blackish and buffy, a white crescent on breast, and in the male ends of outer tail-feathers white, but these last buffy in the female. The wings, when closed, do not reach to the end of the tail. L., 9.75; W., 6.25; T., 4.75.

Range.—Eastern North America, wintering in the extreme southern part of the United States, and southward to Central America.

Range in North Carolina.—Nearly whole State in summer, but absent or much less common in the eastern section.

The well known Whip-poor-will reaches our State about the first part of April or even late in March, but the records seem to show that these birds probably pass on, while the breeding birds arrive some two or three weeks later. These conclusions result from a consideration of the fact that the dates of arrival fall largely into two groups, one centering about early April, the other about two weeks later. The latest date recorded at Raleigh in fall was November 6, the next latest October 10.

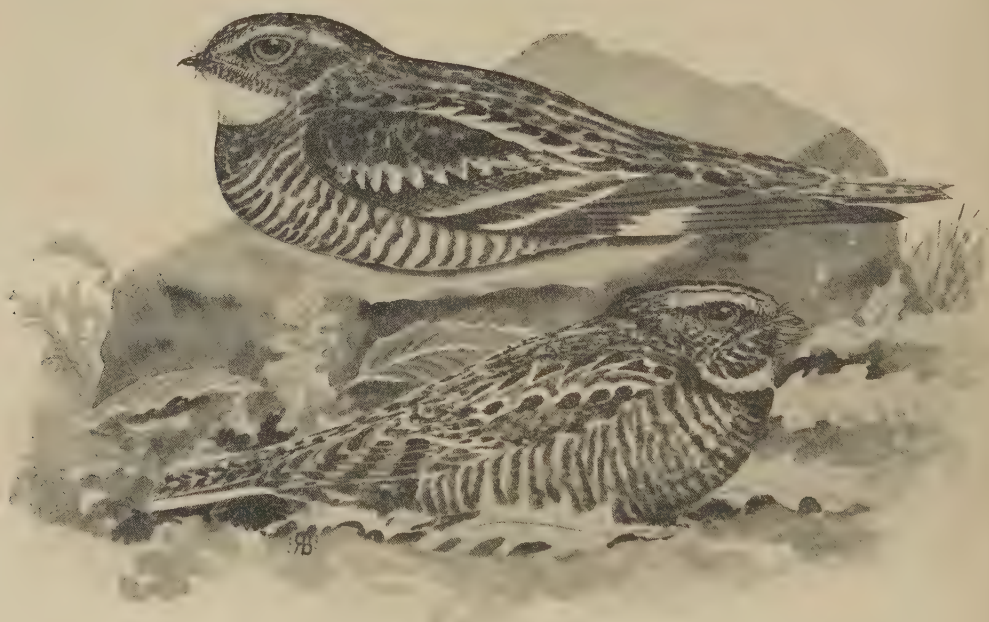


FIG. 155. NIGHTHAWK (UPPER) AND WHIP-POOR-WILL (LOWER).

This is a nocturnal woodland bird, often heard but seldom seen, which leads to the erroneous idea that the Whip-poor-will and the "Bullbat" are the same bird. This is not an unnatural conclusion, due to the fact that we see the one bird shortly before sunset, and hear the other a little later.

The nesting habits of this species are similar to those of the Chuck-will's-widow. The eggs are two in number, and at Raleigh are laid from late April to mid-June. In appearance they are not markedly different from those of the larger bird except in size. They average 1.12 x .88.

The notes are the well known *whip-poor-will* cry, which when heard close at hand loses most of its resemblance to those words, but consists of three loud swishing notes, something like "whish-shoo-whish."

Genus Chordeiles (Swains.)

184. Chordeiles virginianus virginianus (*Gmel.*). NIGHTHAWK; "BULLBAT."

Description.—Blackish, barred and mottled with grayish and buffy; a large white patch on the wing; adult males with a broad bar of white across tail, except on two middle feathers. The wings, when closed, reach quite to end of the tail or beyond. L., 9.75; W., 8.00; T., 4.50.
Range.—Eastern North America, wintering in South America.
Range in North Carolina.—Whole State in summer.

The Bullbat is found in all portions of the State in summer, but exactly when it usually reaches the State in spring is hard to decide, as the records from different localities vary so much from year to year. The earliest recorded dates are at Raleigh, April 15; in Buncombe County, April 19; at Statesville, April 23; and at Chapel Hill also April 23. At the same places in other years, however, the dates of the first arrival in spring range as late as May 16. The latest dates we have of its occurrence in fall are October 6 at Raleigh, and October 13 in Buncombe County.

This species, although breeding in all parts of the State, appears most numerous during the fall migration, when large numbers may be seen passing southward about sunset during any part of the period from mid-July to October. At this time, before the passage of the Audubon bird and game law in 1903, they were killed in large numbers by many of our so-called sportsmen, irrespective of the fact that they were of little use as food and are of great service as destroyers of mosquitoes.

Like the rest of the family, the Nighthawk is preëminently an insectivorous bird, catching on the wing and eating large numbers of the smaller flying insects.

In addition to its ordinary note, which sounds something like "cheap," and which is uttered on the wing, it makes a loud booming noise, apparently caused by its rushing downward through the air, and then suddenly arresting its flight by wings thrown strongly downward.

The eggs are laid on bare ground in fields or open woods. They are two in number, about the same size as those of the Whip-poor-will, but much darker in color, the markings being dark gray, slate, or blackish. They are deposited in May and June.

39. FAMILY MICROPODIDÆ. SWIFTS

These are birds with the gape broad and deep, and the wings long and pointed. The bones of the wing before the bend are unusually short, in which respect they agree with the hummingbirds. One genus occurs with us. This has the shafts of the tail-feathers bare at the tips, and consequently projecting as spinous points.

Genus Chætura (Steph.)

185. Chætura pelagica (*Linn.*). CHIMNEY SWIFT; "CHIMNEY SWALLOW."

Description.—Sooty brown, throat paler. Tail-feathers ending in sharp spines. L., 5.25; W., 5.00; T., about 2.00.
Range.—Eastern North America in summer; winter range unknown.
Range in North Carolina.—Whole State in summer.

The Chimney Swifts arrive from the South about the first week in April, but these first comers apparently pass on, the breeding birds not coming in until two weeks later.

In all parts of the State it is quite abundant in summer, nesting ordinarily in chimneys, though in some of the wilder districts it no doubt still uses hollow trees for that purpose. Pearson has on two occasions seen Chimney Swifts enter hollow cypress trees on the shores of Great Lake in Craven County. Its nesting habits form a curious and well-marked instance of how a bird's manner of nesting may become altered by the advent of man. Perhaps the Swifts, if they were capable of philosophizing on the subject, would rejoice at the benefit man has conferred upon them by furnishing such safe and convenient places as chimneys for nesting sites. The bird's legs are very weak; it does not, therefore, perch like other birds, but clings with its toes and braces itself with its stiff tail-feathers.

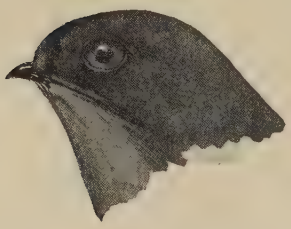


FIG. 156. CHIMNEY SWIFT.

FIG. 157. FOOT AND TAIL OF CHIMNEY SWIFT.

The nest is composed of small twigs glued together by the bird's glutinous saliva, and is placed against the vertical inner wall of a chimney, so as to form a half-saucer-shaped structure. Four to six pure white eggs are laid. Size .80 x .50. These are known to be deposited in this State from late May to mid-July.

This species seems to leave North Carolina for its winter home about the first week in October, our latest dates ranging from October 1 at Raleigh, to October 11 at Weaverville.

The Chimney Swift subsists entirely on insects, which it catches on the wing, and the number it destroys must be so enormous as to render it an exceedingly useful species.

40. FAMILY TROCHILIDÆ. HUMMINGBIRDS

About five hundred species of Hummingbirds are known. These are confined chiefly to South America. Seventeen forms reach the United States, but only one is found east of the Mississippi River. They possess long, slender bills, and their wings are much pointed.

Genus Archilochus (Reichenb.)

186. Archilochus colubris (*Linn.*). RUBY-THROATED HUMMINGBIRD.

Description: Ad. ♂.—Upperparts bright, shining green; wings and tail fuscous, with purplish reflections; throat beautiful metallic ruby-red, bordered on the breast by whitish; rest of the

underparts dusky, washed with greenish on the sides; tail forked. *Ad.* ♀.—No ruby throat-patch; bronzy green above, whitish below; tail nearly even, outer three feathers tipped with white. *Im.* ♂.—Similar to ♀, but throat with dusky streaks, and, in older birds, with ruby-colored feathers. L., 3.74; W., 1.54; T., 1.15; B., .67. (Chap., *Birds of E. N. A.*)

Range.—Canada to Florida and westward to the Great Plains; winters from extreme southern United States to Central America.

Range in North Carolina.—Whole State in summer.

The Ruby-throated Hummingbird is a common summer visitor throughout the State, arriving usually about April 15 and departing early in October.

This is possibly one of the best known of our birds, being a familiar object as it hovers about flowers with its tiny wings beating so fast that they are rendered almost invisible. With its long extensible tongue it sucks the nectar from the deep recesses of blossoms, or catches small insects which inhabit them.

The nest is a small, dainty, cup-shaped object, composed of soft vegetable down, and covered artistically with lichens. Two elongated white eggs are laid at some time between April 20 and July 5. The nests are usually saddled on the limb of some good sized tree, but may be built among small twigs. We have seen them in oaks, pines, apple trees, elms, maples, hickories, and dogwoods, at heights varying from four to thirty-five feet. In pines they seem to be usually built on dead limbs, but in other trees on living ones.

Although so small, they frequently chase other birds away from the neighborhood of their nests.

XVI. ORDER PASSERES. THE PERCHING BIRDS.

This order includes more than half of all the known birds, and about half of those occurring in North Carolina. In it are enumerated nearly all the familiar species of our orchards, groves, thickets, and farms.

Its members are of small or medium size, the largest being the raven, and the next largest the common crow; but the small ones far surpass in numbers those of even medium size.

These birds possess in common the following characters: feet four-toed, always with three toes in front and one behind, the latter being on a level with the rest. None of the toes are webbed or reversible. The tail-feathers are usually twelve in number, and the primaries ten, the first primary being usually either small or else rudimentary and apparently absent.

All of our song-birds belong to this order.

KEY TO FAMILIES

1. Primaries ten, the first about as long as the second. Hind claw not long and straight. Hinder edge of tarsus rounded. Bill depressed, broad at base, hooked at tip. The Flycatchers, *Tyrannidæ*.
1. Developed primaries nine, or if ten, the first rarely half as long as second. See 2.
2. Hinder edge of tarsus rounded. Hind claw long and straight. Developed primaries nine. Bill short, stoutish, not hooked at tip. The true Larks, *Alaudidæ*.
2. Hinder edge of tarsus compressed, forming a sharp ridge behind. See 3.
3. Developed primaries nine, the first one about as long as second. Bill not hooked at tip. See 4.
3. Primaries ten, the first one short, rarely half the length of the second. (Some Vireos have only nine developed primaries, but they have the bill slightly hooked at tip.) See 9.

4. Bill very short, but the gape very wide and deep. Wings very long and pointed. The Swallows, *Hirundinidæ*.
4. Bill not as above. See 5.
5. Bill conirostral, stout at base, with the corners of the mouth drawn downward. See 6.
5. Bill not conirostral, the corners of the mouth not drawn downward. See 7.
6. Bill rather long, often longer than head, without notch at tip or bristles at the gape. The Orioles and Blackbirds, *Icteridæ*.
6. Bill shorter than head, often notched at tip or with bristles at gape. The Sparrow family, *Fringillidæ*.
7. Bill conical, stout. Nostrils placed high, exposed. The Tanagers, *Tangaridæ*.
7. Bill slender, not conical. See 8.
8. Hind claw short and curved, not longer than its toe. Tertials not lengthened. The Wood Warblers, *Minotiltidæ*.
8. Hind claw long and straight, longer than its toe. Tertials lengthened. The Wagtails, *Motacillidæ*.
9. Tarsus with the plates in front fused together. Bristles present at the gape. See 19.
9. Tarsus with distinct plates in front. See 10.
10. Bill more or less hooked at tip. See 11.
10. Bill not hooked at tip. See 13.
11. Bill strongly hooked and toothed at tip, plumage gray, length over 8 inches. The Shrikes, *Laniidæ*.
11. Bill only slightly hooked at tip, plumage not gray. See 12.
12. Head crested, tail tipped with yellow. The Waxwings, *Bombycillidæ*.
12. Head not crested, tail not tipped with yellow. The Vireos, *Vireonidæ*.
13. Tail-feathers stiff and pointed, bill decurved. The Creepers, *Certhiidæ*.
13. Tail-feathers soft and rounded at tip. See 14.
14. Nasal-feathers not directed forwards. See 15.
14. Nasal-feathers directed forwards, covering the nostrils. See 16.
15. Length 8 inches or more. The Mocking-birds, *Mimidæ*.
15. Length less than 7 inches (most under 6). The Wrens, *Troglodytidæ*.
16. Birds of small size, wing less than 4 inches. See 17.
16. Birds of large size, wing over 4 inches. The Crows and Jays, *Corvidæ*.
17. Bill notched at the tip, very slender. The Old World Warblers, *Sylviidæ;* in North America the Gnat-catcher group, Genus *Polioptila*.
17. Bill not notched at tip. See 18.
18. Bill long, wings long, tail short. The Nuthatches, *Sittidæ*.
18. Bill short, wings short, tail long. The Titmice, *Paridæ*.
19. Birds of small size, wing less than 3 inches. The Old World Warblers, *Sylviidæ*, Kinglet group, Genus *Regulus*.
19. Birds of moderate size, wing more than 3 inches. The Thrushes, *Turdidæ*.

41. FAMILY TYRANNIDÆ. TYRANT FLYCATCHERS

This family contains a number of birds of medium or small size, mainly dull colored and of little musical ability, the voice being either harsh or plaintive.

The wings are long, the legs and feet rather weak. The bill is triangular, flattened from above, wide at the base, and slightly hooked at the tip. There are usually bristles at the gape, which no doubt aid the bird in catching flying insects.

Six genera occur with us, and a seventh may at any time furnish an occasional straggler to our fauna.

KEY TO GENERA

1. One or more of the outer wing-quills attenuate. Crown in adult with concealed red or yellow patch. See 2.
1. No attenuate wing-quills; no crown-patch. See 3.
2. Tail deeply forked, much longer than wings. *Muscivora.**
2. Tail not forked, shorter than wings. *Tyrannus*.
3. Wings and tail with chestnut. Length 8 or more. *Myiarchus*.
3. Wings and tail without chestnut. Length less than 8. See 4.

*Includes the Fork-tailed flycatcher *(M. tyrannus)* of tropical America, with tail-feathers black, and the Scissor-tailed Flycatcher *(M. forficatus)* of the southwestern United States, with tail-feathers chiefly white. Both species have been known to straggle as far north as New Jersey, or even farther. Both are about the size of a Kingbird.

4. Wing at least six times as long as tarsus. See 5.
4. Wing not more than five times as long as tarsus. See 6.
5. A white cottony patch on each side of rump; length more than 7 inches. *Nuttallornis.*
5. No white patch on each side of rump; length less than 7. *Myiochanes.*
6. Length 7 or more. *Sayornis.*
6. Length 6 or less. *Empidonax.*

Genus Tyrannus (Lacep.)

The genus includes a few flycatchers with long wings, comparatively short tail, and a concealed crown-patch. One species is common with us, and another may very possibly occur in the southeastern portion of the State as a straggler.

1. Blackish above, tail conspicuously tipped with white. Kingbird, *Tyrannus tyrannus.*
1. Plumbeous gray above. Tail not tipped with white. Gray Kingbird, *Tyrannus dominicensis.*
(The latter ranges as far north as South Carolina on the coast.)

187. Tyrannus tyrannus (*Linn.*). Kingbird; "Bee-martin."

Description: Ads.—Upperparts grayish slate-color, darker on the head and upper tail-coverts; head with a concealed orange-red crest; tail black, tipped with white; underparts white, washed with grayish on the breast. *Im.*—Similar, but without the crown-patch, and with the plumage more or less tinged with ochraceous-buff. The male has two outer primaries deeply emarginate at the tip, the female usually only one, the immature bird none. L., 8.51; W., 4.64; T., 3.55; B. from N., .55. (Chap., *Birds of E. N. A.*)

Range in United States.—Chiefly east of the Rocky Mountains.

Range in North Carolina.—Whole State in summer, breeding wherever found.

Fig. 158. Kingbird.

The Kingbird is found throughout the whole State in summer, arriving from the south usually about the middle of April, except in the mountains, where it reaches its breeding grounds late in April or early in May.

It breeds in June, building its nest in the fork of a small tree, or saddling it on the outstretched limb of a larger one. The nest is made of weed stems, often with much cotton, cattail fluff, or other soft material. The eggs are usually three in number, of a creamy-white ground-color, spotted near the larger end with rich umber and chestnut-red. The average size is .97 x .70. After the breeding season, the bird soon leaves the State, not having been recorded later than September 19.

The Kingbird is much less common in the vicinity of Raleigh than formerly, and Collett states that it decreased in Cherokee County for a time, but of late appears to be increasing.

The name "Kingbird" is given to this flycatcher on account of its habit of attacking larger birds, such as hawks, crows, and vultures, and driving them from the neighborhood of its nest. It accomplishes this feat by its superior powers of flight, which enable it to make matters so uncomfortable for the larger bird that a rapid retreat becomes necessary to insure safety from discomfiture. It will occasionally even alight on the back of a Turkey Vulture in its eagerness to drive the trespasser away.

Genus Myiarchus (Cab.)

188. Myiarchus crinitus (*Linn.*). CRESTED FLYCATCHER.

Description.—Olivaceous above, with bright chestnut on wings and tail, breast ashy gray, belly clear yellow. Head somewhat puffy, but not really crested. Measurements of 30 Raleigh specimens: L., 7.75-9.00; W., 3.40-4.25; T., 3.60-3.75.

Range in United States.—Eastern United States in summer, east of the Great Plains.

Range in North Carolina.—Whole State in summer, breeding everywhere.

FIG. 159. CRESTED FLYCATCHER.

The Crested Flycatcher is a common summer visitor throughout the State, arriving in spring a little earlier than the Kingbird, namely, about the middle of April over the greater portion of the State and a little later in the mountain region. In fall it has been observed as late as September.

Unlike the other members of its family, this species makes its nest in holes in trees, often in the cavities of old apple trees. The nesting period is in late May and in June, and the nest is composed of fine grass, lined with feathers or hair. Many individual pairs have a habit of using a shed snakeskin in the composition of the nest. The eggs are usually five in number, occasionally four or six, and are quite different in color and markings from those of any other of our birds, being buffy brown in ground-color, streaked *lengthwise* with well defined lines and markings of purple and dark brown.

Unlike the Kingbird, which frequents open country, the Crested Flycatcher is chiefly a woodland bird, although it by no means despises orchards and groves as breeding localities.

Genus Sayornis (Gray)

189. Sayornis phœbe (*Lath.*). PHŒBE; "PEWEE."

Description: Ads.—Upperparts grayish brown with an olive-green cast; crown distinctly darker, *fuscous;* wings and tail fuscous, wing-bars not conspicuous; outer vane of outer tail-feather white or yellowish white, except at the tip; underparts white, more or less washed with yellowish, and tinged with brownish gray on the breast and sides; bill *black. Im. and Ads. in winter.*—Similar, but upperparts more olive, underparts more yellow, and wing-bars more distinct. L., 6.99; W., 3.38; T., 2.95; B. from N., .41.

Remarks.—The Phœbe's principal distinguishing characters are its fuscous crown-cap, white outer vane of the outer tail-feather, and blackish lower mandible. (Chap., *Birds of E. N. A.*)

Range in United States.—East of the Mississippi; breeding throughout its range, except in the more southern portion.

Range in North Carolina.—Whole State at all seasons, except parts of the mountain region in winter, but not common in the east in summer.

FIG. 160. PHŒBE.

The Phœbe is one of the most familiar summer birds of the mountains, breeding often on the beams or rafters of barns and under bridges. The nest is compactly and neatly built of mud and various vegetable substances, with a lining of grass and feathers. One taken April 20, 1892, near Raleigh was situated on a slight ledge in the vertical side of a large bowlder near Neuse River, and was composed of green moss, cotton, fine grass, and weed stems felted together, making a deep, almost cup-shaped nest. A pair used to nest in the side of an old dry well close to a house formerly occupied by C. S. Brimley.

The eggs are four or five in number, pure white, usually unspotted, but sometimes with a few reddish spots near the larger end. The average size is .80 x .50. We have few actual breeding dates, but the nesting season appears from these to be from the middle of April to the end of May.

In winter the Phœbe feeds to a large extent on berries, although, like other flycatchers, it is almost exclusively insectivorous at other seasons.

Genus Nuttallornis (Ridgw.)

190. Nuttallornis borealis (*Swains.*). OLIVE-SIDED FLYCATCHER.

Description.—Slaty brown above, with darker streaks. Middle line of belly distinctly and abruptly white; otherwise grayish below. A conspicuous tuft of cottony white feathers on each side of rump, usually concealed by the wings. L., 7.50; W., 4.25; T., 3.00.

Range in United States.—Whole country in migrations, but not common. In summer only on the northern border and the higher mountains.
Range in North Carolina.—Portions of the mountain region in summer.

The Olive-sided Flycatcher is quite a rare bird, and in this State has been recorded from Highlands, where Brewster found it late in May, 1885, settled down and apparently preparing to breed. (*Auk*, Jan., 1886, p. 105.) C. L. Boynton also records it as nesting near this place and as having been first seen on April 25. Cairns states that it bred on the Black Mountains in Buncombe County, and says it was first observed near Weaverville in 1886, on April 19. Rhoads in 1895 saw one on Roan Mountain.

The nest resembles that of the Wood Pewee, though larger. It is saddled on the horizontal limb of some pine, spruce, hemlock, or other conifer, usually at a considerable height from the ground. The eggs are commonly three in number, laid in June or early July, and in color much resemble those of the Wood Pewee. They measure about .80 x .60.

Genus Myiochanes (C. & H.)

191. Myiochanes virens (*Linn.*). WOOD PEWEE.

Description.—Olive brown above, paler below. Known from other small flycatchers by the short legs and long wings, as well as by its well-known notes, which may be represented by *pe-weeee*, or *pe-de-weeee*, the latter being perhaps the nearer to nature. Measurements of 33 Raleigh specimens: L., 5.80-6.40; W., 3.00-3.50; T., 2.40-2.75.
Range in United States.—East of the Great Plains in summer; breeds throughout its range.
Range in North Carolina.—Whole State in summer, breeding everywhere.

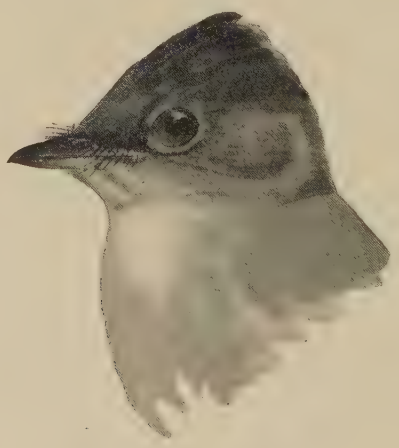


FIG. 161. WOOD PEWEE.

The Wood Pewee is the most common of all our flycatchers, arriving in the State from the south (Mexico, Central and South America), where it spends the winter, about the last week in April, while the last birds do not leave in autumn until October. (Latest dates are, at Raleigh, October 13; Weaverville, October 5; Durham, October 23.)

The birds breed in late May or June, the compact nest, which is externally covered with gray lichens, being saddled on the limb of some pine, oak, or other tree, usually at a considerable distance from the ground. The eggs are three in number, of a creamy-white ground-color, marked chiefly about the larger end with spots of reddish brown, burnt umber, and lilac, forming a wreath. Size, .75 x .55.

There are probably few people of our State who have not noticed this bird sitting upright on some stake or dead limb, turning its head from side to side on the lookout for any stray insect that may come flying past. A moment later you may see it dart from its perch and after a few quick turns, the sharp snap of the bill can be heard, indicating that the desired insect has been captured. Complacently the captor returns to its perch and with a satisfied *pee-dee-wee* resumes its watch. Pearson observed a Wood Pewee at Guilford College capture thirty-six insects in a period of five minutes.

Genus Empidonax (Cab.)

This group contains a number of small flycatchers (none being as large as the Wood Pewee) which are much alike in general appearance. Their movements, notes, and breeding habits are, however, by no means alike; hence in spring, when birds are noisy, it is easier to distinguish them than at other times. Of our four species, two have been taken only in the mountain region, and but one of the others is at all common. This is the Acadian or Green-crested Flycatcher, which is found regularly in summer in all parts of the State.

KEY TO SPECIES

1. Underparts distinctly yellow. *Yellow-bellied Flycatcher.*
1. Underparts not distinctly yellow. See 2.
2. Longest primary nearly an inch longer than secondaries. Plumage olive-green. *Acadian Flycatcher.*
2. Longest primary not more than ⅔ inch longer than secondaries, plumage not olive-green. See 3.
3. Longest primary about ⅔ inch longer than secondaries. Bill pale below. *Alder Flycatcher.*
3. Longest primary about ½ inch longer than secondaries. Bill dark below. *Least Flycatcher.*

192. Empidonax flaviventris (*Baird.*) Yellow-bellied Flycatcher.

Description: Ads.—Upperparts rather dark olive-green; wings and tail fuscous; greater and lesser wing-coverts tipped with white or yellowish white; underparts sulphur-yellow, the belly pure, the throat, breast, and sides more or less washed with olive-green; upper mandible black, lower mandible whitish or flesh-color; second to fourth primaries of equal length, the first shorter than the fifth. *Im.*—Yellow of the underparts brighter, wing-bars more yellow, and sometimes tinged with pale ochraceous-buff. L., 5.63; W., 2.65; T., 2.16; B. from N., .33.

Remarks.—This is the most yellow of our small flycatchers. In any plumage the entire underparts, including the *throat*, are sulphur-yellow or dusky yellowish. In the other eastern species of this genus the throat is white. (Chap., *Birds of E. N. A.*)

Range in United States.—In summer the northern tier of States and the higher mountains, east of the Mississippi, passing through the whole East during the migrations to reach these breeding grounds, but not often seen.

Range in North Carolina.—A rare transient in the mountains.

The Yellow-bellied Flycatcher breeds from the mountains of Pennsylvania northward. The nest, unlike those of our other flycatchers, is not placed in a tree or bush, but is imbedded in a bank, or stump, or among the roots of an upturned tree.

and apparently always in a boggy or swampy place. The eggs are four in number, laid in mid-June or later, and from the descriptions appear to resemble those of the Acadian Flycatcher, in size, color, and markings.

FIG. 162. YELLOW-BELLIED FLYCATCHER.

In the Northern States it reaches its breeding grounds in late May, and begins to leave for its winter home in Mexico and Central America in August. It has been recorded only once from North Carolina, when Cairns took a female in Buncombe County, August 11, 1890.

193. Empidonax virescens (*Vieill.*). ACADIAN FLYCATCHER.

Description.—Upperparts between olive-green and dark olive-green; wings and tail fuscous; greater and lesser wing-coverts yellowish white, forming two conspicuous wing-bars; underparts white, washed with pale yellowish and *slightly* tinged with greenish on the breast; the throat, and frequently the middle of the belly, pure white; upper mandible black, lower mandible whitish or flesh-colored; second to fourth primaries of about equal length, the first and fifth shorter and also of equal length. *Im.*—Upperparts greener; underparts more tinged with yellow; wing-bars and outer edges of the *tips of the secondaries* ochraceous-buff. L., 5.75; W., 2.85; T., 2.35; B. from N., .36.

FIG. 163. ACADIAN FLYCATCHER.

Remarks.—This species has the upperparts fully as olive-green as the Yellow-bellied Flycatcher, but the underparts are never entirely yellow, and the throat is always white. (Chap., *Birds of E. N. A.*)

Range in United States.—Eastern States, including the Mississippi Valley, in summer; not found in the extreme northern States.

Range in North Carolina.—Whole State in summer, breeding wherever found.

The Acadian Flycatcher is the only one of its genus which is generally common in this State. It arrives from its winter sojourn in Mexico or South America

about the end of April or in the first days of May, and has been known to remain with us as late as September 11. The nest is a shallow, saucer-shaped structure, attached by the edges to the fork of a drooping limb of a dogwood, beech, or other favorite tree. It is a frail, light structure—so thin, in fact, that the eggs can frequently be seen through the bottom of the nest from below. The rim of the nest is contracted and the contents are thus prevented from rolling out. The eggs are usually three in number, of a buffy ground-color, ornamented with reddish-brown spots, often in a wreath, near the big end. Size .71 x .53.

The bird's characteristic note is an explosive *chip* or *chup*, uttered when it is at rest, and usually accompanied with a jerk of the tail. It also makes a noise with its wings when flying from one perch to another, somewhat like that produced by a dove when taking wing. Its favorite haunts are dense woods, especially those along small woodland streams.

194. Empidonax trailli alnorum (*Brewst.*). ALDER FLYCATCHER.

Description.—Olive-brown above, first wing-quill shorter than fifth. Underparts whitish, a suggestion of gray on the breast and belly, washed with whitish. Extreme measurements of 4 Raleigh specimens: L., 5.35-6.00; W., 2.65-2.85; T., 1.75-2.25.

Range in United States.—Breeds from Northern States northward; winters south of the United States.

Range in North Carolina.—Has so far been taken only in Wake and Buncombe counties during the migrations.

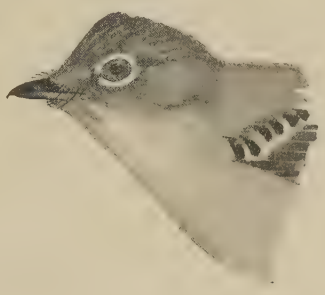


FIG. 164. ALDER FLYCATCHER.

The Traill's, or Alder Flycatcher, resembles the Wood Pewee more than the other small flycatchers, but, besides being smaller, it possesses wings decidedly shorter and legs that are distinctly longer. In this State it has thus far been taken only at Raleigh, on May 14, 1892; May 16, 1893; September 21, 1893; and August 21, 1898; and in Buncombe County by Cairns in September, 1889. It is quite unlikely that it will ever be found breeding in North Carolina, unless perchance in some of the higher mountains. The nest is said to be cup-shaped, well made, and usually placed in a fork where two twigs leave the main stem of some small tree or bush. The bird is partial to the alder thickets which grow along streams. The eggs do not materially differ in appearance from those of the two preceding species.

195. Empidonax minimus (*W. M. and S. F. Baird*). LEAST FLYCATCHER.

Description: Ads.—Upperparts between olive-green and olive or olive-brown; wings and tail fuscous; greater and lesser wing-coverts tinged with ashy white; underparts whitish,

washed with dusky grayish on the breast and sides, and generally with a slight tinge of yellowish on the belly; lower mandibles usually *horn-color*. *Im.*—Underparts slightly more yellow; wing-bars more buffy. L., 5.41; W., 2.51; T., 2.21; B. from N., .31.

Remarks.—This is the smallest of our flycatchers. Its size, the comparative absence of yellow on the underparts, and the generally horn-colored or brown lower mandibles are its chief distinguishing characters. (Chap., *Birds of E. N. A.*)

Range in United States.—Eastern States, breeding northward. Winters, like the rest of the genus, wholly south of the United States.

Range in North Carolina.—The mountain region in summer between 2,000 and 4,000 feet elevation, breeding at least sparingly.

FIG. 165. LEAST FLYCATCHER.

The Least Flycatcher, the smallest species of the family occurring with us, is a regular summer visitor in portions of the mountains. In late May, 1885, Brewster found it of sparse but general distribution in parts of Buncombe, Haywood, Macon, and Jackson counties. Cairns regarded it as a rare summer visitor in Buncombe County, but in all his years of observation found only one nest. Rhoads discovered it breeding on Roan Mountain. C. S. Brimley took one near Highlands, Macon County, on May 9, 1908, but, judging from the size of the ovaries, it was probably a migrant.

We have only one record of the arrival of this species in the State from its winter home in the south, namely, at Highlands, where it was observed by C. L. Boynton on April 24, in 1886.

This species is said to be less of a forest-loving bird than the others of the genus, preferring open country. The nest is a compact, cup-shaped structure, placed in the upright fork of a small tree. The only nest found by Cairns was in a persimmon tree at a height of twenty feet from the ground. The eggs are pure white, usually unspotted, averaging .65 x .50.

42. FAMILY ALAUDIDÆ. LARKS

A family of Old World birds, represented in America by one genus and a single species. A number of slightly differing geographical races or subspecies are recognized by ornithologists. The birds most commonly called "larks" in this State, namely, the Meadowlark or "Field Lark" (*Sturnella magna*), and the Pipit or "Skylark" (*Anthus rubescens*), belong to other families, and are not true larks.

Genus Otocoris (Bonap.)

The only species of this genus in North America is the Horned Lark. It is pinkish brown or gray above, with a black crescent on the breast and a tuft of lengthened black feathers on either side of occiput. Forehead white or yellow, bordered behind by a black bar, which extends on the sides of the crown, and is bordered below by a broad superciliary light stripe continuous with the light color of the forehead. In winter the head and breast markings are much obscured by the lighter tips of the feathers and the plumage is less bright. The female is much duller and with the markings less distinct.

Two of the several subspecies occur with us in winter.

KEY TO SUBSPECIES

1. Superciliary stripe more or less yellow or yellowish. Size larger, wing of male averaging more than 4.40 inches, of female more than 4.12. *Horned Lark* (*Otocoris alpestris alpestris*).
1. Superciliary stripe white. Smaller, wing averaging 4.13 in male, 3.84 in female. *Prairie Horned Lark* (*Otocoris alpestris praticola*).

196. Otocoris alpestris alpestris (*Linn.*). Horned Lark.

Description.—See under genus. Average measurements of 26 males from Raleigh: L., 7.00-7.50; W., 4.20-4.60; T., 2.60-2.80. Twenty females measured: L., 6.60-7.25; W., 3.20-4.20; T., 2.20-2.75.

Range in United States.—Northeastern States in winter, irregularly much farther south. Breeds wholly north of the United States.

Range in North Carolina.—Irregularly present in some winters in most parts of the State.

Fig. 166. Horned Lark.

Horned Larks are winter visitors in North Carolina, occurring throughout the State with more or less regularity. Flocks were observed at Raleigh in the winter of 1884–5; and again from December 7, 1886, to January 14, 1887. In 1895 they were common on February 20. At Chapel Hill two were taken by Pearson, November 23, 1898, and at Pea Island Bishop took three on February 7 and 8, 1901.

The Horned Lark, except in the breeding season, always goes in large flocks, and invariably frequents open fields. It is one of the birds which *walk* rather than hop.

197. Otocoris alpestris praticola (*Hensh.*). PRAIRIE HORNED LARK.

Description.—See under genus. Average measurements of 9 males from Raleigh: L., 6.90-7.25; W., 4.00-4.25; T., 2.60-2.85. Average of 20 females from Raleigh: L., 6.40-7.00; W., 3.75-4.15; T., 2.40-2.75.

Range in United States.—Upper Mississippi Valley to New York in summer; in winter more or less regularly to the Carolinas.

Range in North Carolina.—Same as the preceding.

FIG. 167. PRARIE HORNED LARK.

The Prairie Horned Lark has been taken in this State, in company with the preceding, at Raleigh in December, 1886, and January, 1887; also on February 20, 1895, and February 11, 1895. At Southern Pines a flock was observed on February 19 and 20, 1902, by C. H. Morrell (*Auk*, July, 1902, p. 289). Cairns called it a rare winter visitor in Buncombe County.

Horned Larks are found most commonly in North Carolina during very cold winters.

43. FAMILY CORVIDÆ. CROWS AND JAYS

This family includes an extensive and cosmopolitan group of birds that agree in having the feathers which cover the nostrils directed forward.

They are divided into two groups: the Crows, which have the plumage mainly or entirely black, are of comparatively large size, and have the wings much longer than the tail; and the Jays, which have the plumage usually varied, often blue or bluish, are of medium size, and have the tail as long as or longer than the wings.

From an economic standpoint, the Crows and Jays have rather bad reputations as robbers of other birds' nests, to some extent sustained by facts. Their other reputed bad habit, that of destroying newly planted or just sprouting grain, seems to be abundantly offset by the great number of white grubs, wireworms, and cutworms which they destroy.

KEY TO GENERA

1. Plumage wholly black. Wings much longer than tail. *Corvus.*
1. Plumage mainly blue. Wings about as long as tail. *Cyanocitta.*

BLUE JAY. Cyanocitta cristata cristata (Linn.)

Genus Cyanocitta (Strickl.)

198. Cyanocitta cristata cristata (*Linn.*). BLUE JAY.

Description.—Blue above, white below, collar black. Wings and tail blue, barred with blackish. Head crested. Outer tail-feathers and secondaries tipped with white. Measurements of 23 Blue Jays from Raleigh: L., 10.50-11.75; W., 4.85-5.30; T., 4.75-5.40.
Range.—Eastern North America, east of the Great Plains.
Range in North Carolina.—Whole State at all seasons.

The Blue Jay, more generally known in North Carolina as "Jaybird," is common in all parts of the State, but perhaps more plentiful in the mountains, where in many towns—as, for instance, Hendersonville and Highlands—it is an abundant bird in the gardens and groves.

The Blue Jay breeds in April and May, building its nest of twigs, leaves, roots, rags, cotton, wool, or other materials. It is a large and not over-tidy structure, placed often in small trees, but more frequently in large ones. The eggs are four or five in number, olive-brown in color, thickly spotted with darker shades; and measure about 1.10 x .85.

The harsh screaming notes of this bird are well known to all. It has a wide range of calls, one of which strongly suggests the scream of the Red-shouldered Hawk.

It enjoys a wide variety of food, which includes acorns, berries, and the young of other birds.

Genus Corvus (Linn.)

Plumage entirely black in our species. Wings long and pointed, much longer than the tail. Birds of large size, the largest of our perching birds, the wing always more than nine inches.

The crows are well known as shy, wary birds of apparently unusual intelligence.

KEY TO SPECIES

1. Feathers of throat lanceolate, distinct from one another. Size large, wing more than 15 inches. *Northern Raven.*
1. Feathers of throat short, the webs blended. Size smaller, wing less than 13 inches. See 2.
2. Gloss of plumage purplish violet. Wing 12 or more. Whole State. *Crow.*
2. Gloss of plumage green and violet. Wing 11½ or less. Coastwise only. *Fish Crow.*

199. Corvus corax principalis (*Ridgw.*). NORTHERN RAVEN.

Description.—Plumage wholly black. Feathers of throat narrow and pointed. L., 24.00; W., 17.00; T., 9.75.
Range in United States.—Eastern United States, mainly in the mountains from New England to northern Georgia. Another subspecies occurs west of the Mississippi.
Range in North Carolina.—Mountainous parts of the State.

Ravens in this State are now confined to the mountains, where they have been recorded at various places. In Buncombe County Cairns said it was common in 1891 and bred on Craggy Mountain. On Roan Mountain birds were noted near the summit by Rhoads in 1895. At Tryon one was seen by Loomis, February 15, 1907. On Grandfather Mountain one was seen by Metcalf, September 10, 1908, and

Ravens were said by Wayne to breed there. (*Auk*, Jan., 1910, p. 85.) Bruner and Feild found ravens on Roan Mountain, June 29, 1911. Besides these definite localities, Brewster stated that in 1885 it was common in the portion of the State he visited (parts of Macon, Jackson, Haywood, and Buncombe counties), everywhere above 5,000 feet. There is a mounted specimen in the State Museum at Raleigh which came from Topton, in Cherokee County, in April, 1906. It was a fully-feathered young bird when received, and it was kept alive for more than a year. During its captivity its food consisted entirely of animal matter, all kinds of vegetable food being consistently refused.

FIG. 168. NORTHERN RAVEN.

A second specimen reached the Museum on February 9, 1912. This came from Bushnell, in Swain County. It had been caught in a steel trap and died on the night of its arrival at the Museum.

The first of these two specimens was a male; the second an adult female, with ovaries *not* showing any indication of early nesting.

The Raven formerly inhabited the coast, and in the eighties there was a mounted specimen in the possession of Clarke and Morgan, taxidermists, at New Bern, said

to have been taken in Craven County. H. H. Brimley saw some near Beaufort on June 4 and 8, 1892, which appear to have been the last recorded in that region.

This bird usually builds its nest on cliffs in the most inaccessible situations, the structure being composed of large sticks, lined with coarse grass and wool. The same nest is used many years in succession. The eggs are four or five in number, of a pale bluish green or light olive-green, spotted, blotched, or streaked with purple and greenish brown. Size about 1.90 x 1.30.

The Raven feeds readily on carrion. It also eats small mammals, young birds, snails, and other animal food.

200. Corvus brachyrhynchos brachyrhynchos (*Brehm*). Crow.

Description.—Black. Gloss of plumage purplish violet, duller beneath. L., 19.25; W., 12.20; T., 7.50.
Range in United States.—Whole country, except here and there locally.
Range in North Carolina.—Whole State at all seasons, except on the higher mountains.

Fig. 169. Crow.

The Crow is doubtless the best known bird in North Carolina. It breeds in April or May, usually building its nest in the top of a tall pine tree growing in a retired situation. The nest is a heavy, compact structure, composed of twigs and sticks and lined with leaves and grass. The eggs are four to six in number, in color varying from pale bluish to an olive-green and thickly spotted and blotched with dark brown. Size 1.70 x 1.20.

The Crow is a bird of varied diet, not despising the farmer's newly planted corn, nor the eggs and young of other birds. It is also quite partial to grubworms, cutworms, wireworms, and other insects, by the destruction of which it is of no small service to the farmer.

Pearson has known individual Crows to become of great annoyance to poultry raisers, by developing a most unpleasant habit of eating newly hatched chickens, and H. H. Brimley reports the killing of young Turkeys by Crows near White Lake. In the light of all its misdeeds, the Crow will evidently have to eat many injurious insects if the balance of popular sentiment is to swing in its favor.

201. Corvus ossifragus (*Wils.*). FISH CROW.

Description.—Entire plumage black, with steel-blue or deep purplish reflections, generally more greenish on the underparts. L., 16.00; W., 11.00; T., 6.40; B., 1.50.

Remarks.—The Fish Crow may be distinguished from the common crow (1) by its smaller size. (2) By the uniform and somewhat richer color of the back. In *brachyrhynchos* the feathers of the back have dull tips; when the freshly plumaged bird is held between the observer and the light these tips give the back a ringed or slightly scaled appearance. In *ossifragus* these tips are wanting, and the back is uniformly colored. (3) By the brighter color of the underparts. In *brachyrhynchos* the underparts are generally much duller than the upperparts; in *ossifragus* they are nearly as bright. (Chap., *Birds of E. N. A.*)

Range in United States.—Eastern and southern coasts from New York to Louisiana.

Range in North Carolina.—Coast region only, where it is resident.

The Fish Crow, a somewhat smaller bird than the foregoing species, is a common resident along our coastal region, nesting in trees in suitable situations. The nests and eggs are similar to those of the common crow, but the latter are smaller, averaging only 1.50 x 1.10.

The feeding habits of Fish Crows are similar to those of its larger relative, but, on account of a different habitat, they also feast upon fish, crabs, and other creatures that are washed ashore by the waves. They also plunder the heron and cormorant rookeries, eating the eggs when the parents are absent from their nests. Pearson has found their nests late in April and May in Dare, Hyde, and Carteret counties. He observed that if you found one Fish Crow's nest in a grove it was frequently the case that a search would reveal perhaps half a dozen others within a short distance.

The Starling, *Sturnus vulgaris*, so far as we are aware, has not yet been recorded from North Carolina. This European species was first introduced into this country in 1890, when Eugene Schieffelin liberated sixty in Central Park, New York City. Since that time it has increased rapidly in numbers and its range has extended in a southerly direction as far as Newport News, Va. We may, therefore, expect it to appear in North Carolina at any time. The Starling is about eight and one-half inches in length. In general appearance it is a short, metallic-purplish, black bird, and is usually heavily covered with creamy white spots. To the minds of many ornithologists this bird bids fair to become as great a nuisance in the United States as the English Sparrow. The Starling belongs to the family *Sturnidæ*, of which it is the only representative in the United States.

44. FAMILY ICTERIDÆ. BLACKBIRDS, ORIOLES, ETC.

This is a family of medium-sized birds, intermediate in some respects between the Crows on the one hand and the Finches on the other, but perhaps in most respects nearer the latter. All are distinctively American birds.

KEY TO GENERA

1. Outlines of bill nearly or quite straight, the tip not evidently decurved, the commissure not sinuate. See 2.
1. Outlines of bill distinctly curved, the tip decurved, the commissure evidently sinuated. *Crow Blackbirds.* See 6.
2. Bill stout, conical, its depth at base at least one-third its length. See 3.
2. Bill slender, its depth at base scarcely one-third its length. See 5.
3. Tail-feathers acute, middle toe with claw longer than tarsus. Bill stout, shorter than the head. *Dolichonyx.*
3. Tail-feathers not acute, middle toe with claw not longer than tarsus. See 4.
4. Bill stout, much shorter than head. *Molothrus.*
4. Bill more slender, about as long as head. *Agelaius.*
5. Tail not more than two-thirds length of wing, the feathers acute. Breast yellow, with a black crescent. *Sturnella.*

5. Tail about as long as wing, the feathers not pointed. No black crescent on breast. *Icterus.*
6. Tail much shorter than wing, nearly even. Bill slender, shorter than head. *Euphagus.*
6. Tail about as long as or longer than wing, graduated, the middle tail-feathers much the longest. Bill stout, as long as head. See 7.
7. Wing less than 6.50 in male, less than 5.25 in female. *Quiscalus.*
7. Wing more than 6.50 in male, not less than 5.25 in female. *Megaquiscalus.*

Genus Dolichonyx (Swains.)

202. Dolichonyx oryzivorus (*Linn.*). Bobolink; "Ricebird."

Description: Ad. ♂, breeding plumage.—Top and sides of the head and underparts black, the feathers more or less tipped with a narrow whitish or cream-buff fringe, which wears off as the season advances; back of the neck with a large yellowish cream-buff patch; middle of back generally streaked with cream-buff; scapulars, lower back, and upper tail-coverts soiled grayish white; wings and tail black; tail-feathers with *pointed tips;* bill blue-black. *Ad. ♀.*—Upperparts olive-buff, streaked with black; crown blackish, with a central stripe of olive-buff; nape finely spotted and back broadly streaked with black; wings and tail brownish fuscous; tail-feathers with *pointed tips;* underparts yellowish or buffy white. *Ads. in fall and Im.*—Similar to female, but buffier and more olivaceous throughout. L., 7.25; W., 3.76; T., 2.73; B., .55.

Remarks.—The young and adults in fall plumage are known as Reed-birds. Adults acquire this plumage by a complete molt after the breeding season. The breeding plumage is regained by a complete molt in the spring, and not, as has been supposed, by a change in the color of the feathers without molting. Freshly plumaged males have the black veiled by yellow tips to the feathers; these gradually wear off, and by June have almost entirely disappeared (cf. Chapman, *Auk*, X, 1893, 309). (Chap., *Birds of E. N. A.*)

Range.—Eastern United States in summer, breeding in the more northern States, wintering in South America.

Range in North Carolina.—Whole State, in the migrations only; most abundant in the fall in the coastal region.

The Bobolink, better known in the South as the "Ricebird," reaches this State from its winter home in South America about the close of the third week in April, and often congregates in the fields of crimson clover to feed on the unripened seeds. By the end of May all have passed on to their breeding grounds farther north. In fall they occur from about August 15 to October 15, being then seen chiefly in the coast region. It is at this season that their depredations in the rice fields have earned for them the appropriate name of Ricebird, and with regard to this we cannot do better than quote from the annual report of Dr. C. Hart Merriam, chief of the U. S. Biological Survey for 1886: "One of the most important industries of the Southern States, the cultivation of rice, is crippled and made precarious by the semi-annual attacks of birds. Many kinds of birds feed upon rice, but the bird that does more injury than all the rest combined is the Bobolink of the North, called Reed-bird along the Chesapeake, and Ricebird in the South." Captain Bendire in *Life Histories of North American Birds*, 1895, page 431, quotes Captain Hazard of Annandale, S. C., in part as follows: "During the nights of August 21, 22, 23, and 24, millions of these birds make their appearance and settle in the rice fields. From the 21st of August to the 25th of September our every effort is to save the crop. Men, boys, and women, with guns and ammunition, are posted on every four or five acres and shoot daily an average of about one quart of powder to the gun. This firing commences at first dawn of day and is kept up till sunset. After all this expense and trouble our loss of rice per acre seldom falls under five bushels, and if from any cause there is a check to the crop during its growth which pre-

vents the grain from being hard, but in milky condition, the destruction of such fields is complete, it not paying to cut and bring the rice out of the field."

In the spring of 1913, H. H. Brimley and T. W. Adickes found Ricebirds so plentiful on the Orton Plantation, below Wilmington, that the owner found it necessary to protect his ripening oat crop by means of boys with guns. The birds were noted as being very persistent in their attacks on the oats.

FIG. 170. BOBOLINK.
(A male in Nuptial Plumage.)

From this it can be seen how destructive this bird may be in certain sections. In early days they doubtless fed on the seeds of wild marsh grasses, but the cultivation of rice furnished them with an easy and abundant supply of food right in their path, and they naturally proceeded to make use of it. As very little rice is now grown in North Carolina, these birds do the State much less harm than in former times; the same may now be said of South Carolina, and the above quotations regarding their depredations on rice are chiefly of interest as a matter of ornithological history.

Although this bird usually breeds only in the Northern States, it has been detected nesting in Louisiana and suspected of breeding in Florida, and in this connection it may be interesting to note that Seeman reports seeing two males at Durham on June 17 and one on June 28, 1903.

Genus Molothrus (Swains.)

203. Molothrus ater ater (*Bodd*). Cowbird.

Description.—Male, glossy black, head and neck brown. Female, smaller, dusky brown. Average measurements of 19 Raleigh specimens: L., 6.75-7.80; W., 3.75-4.40; T., 2.40-3.15. The smallest measurements are those of the smaller females, the largest those of the biggest males.

Range.—In eastern United States, breeding on the Atlantic coast at least, mostly north of North Carolina; south in winter to Mexico.

Range in North Carolina.—Whole State irregularly in the migrations, and in the eastern half at least during the winter months.

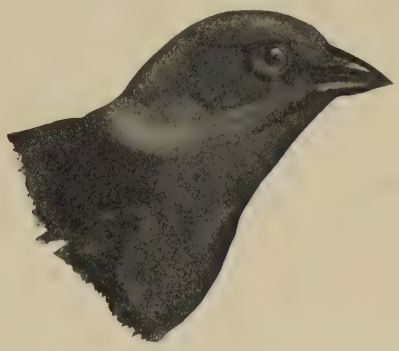


Fig. 171. Cowbird.

The Cowbird has been seldom recorded from the State of late years. At Raleigh it used to be rather common in February and March, and for several years previous to 1889 passed through in enormous numbers, feeding in company with the red-winged blackbirds in newly planted grain-fields. Since then few have been seen. Cairns recorded it at Weaverville, Buncombe County, between February 12 and May 12 in the spring, and August 18 to December 8 in the fall. Collett records it from Andrews on April 7, 1902. Pearson shot one near Southport, Brunswick County, August 14, 1909, and saw one at Parmele, Martin County, August 25, 1903. At Raleigh it has also been observed by C. S. Brimley occasionally in fall and winter, the earliest date being September 4, and latest in spring, April 29.

This bird lays its eggs in the nests of other birds. A list of over ninety-two species of birds thus imposed upon is given by Captain Bendire in *Life Histories of North American Birds*, pages 237-8. The egg is said to hatch before those of the owner of the nest, and the young Cowbird, which grows very rapidly, often smothers or crowds the other young birds out of the nest.

Although it has not been detected breeding in this State, the late dates of May 12 in Buncombe County and April 29 in Wake County, combined with its August records, make it probable that it may breed here occasionally.

Genus Agelaius (Vieill.)

204. Agelaius phœniceus phœniceus (*Linn.*). Red-winged Blackbird.

Description.—Adult male glossy black, wing-coverts scarlet with buffy edgings, male in winter with the black feathers edged with lighter, more or less obscuring the black. Female

dusky, streaked. Extreme measurements of 35 specimens from Raleigh: L., 7.25-9.40; W., 3.75-4.80; T., 2.75-3.80. The males are considerably larger than the females, as is usual in the family.

Range.—Temperate North America, wintering in the more southern States.

Range in North Carolina.—Whole State at all seasons, except in the mountain region, where it is chiefly a summer visitor.

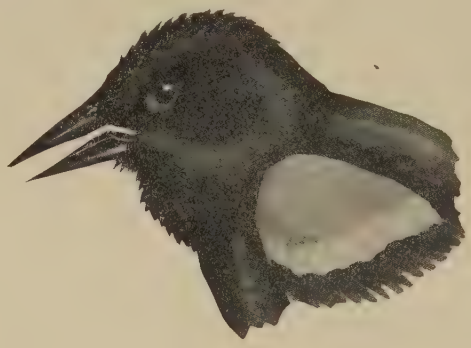


FIG. 172. RED-WINGED BLACKBIRD.

The Red-winged Blackbird is the best known member of the blackbird family in North Carolina. It breeds in marshes throughout the State. In the mountain region it appears to be only a summer visitor, arriving in March or earlier, but in the rest of the State it is found at all seasons, although the flocks in winter seem to be composed almost entirely of females. In February and March their numbers are greatly augmented by the arrival of migrants bound northward. At this season they feed to a great extent in the fields of newly planted grain, probably doing some damage by eating the sprouting seeds, and some good by destroying cutworms and other noxious insects. After March, their numbers having been reduced to the resident population, they confine themselves pretty closely to the lowgrounds, where they nest in reeds, cattails, or bushes growing in marshes. The nests are composed of coarse marsh grasses, woven together into deep cup-shaped structures. The eggs in this State are laid in May and June, and are usually four in number. In color they are pale bluish, marked with dots and lines that look as if they had been made with pen and ink. Size 1.00 x .70.

Speaking of this bird, Coues wrote: "In the breeding season the 'creaking-chorus' makes an indescribable medley."

Genus Sturnella (Vieill.)

205. Sturnella magna magna (*Linn.*). MEADOWLARK; "FIELD LARK."

Description.—Much streaked above. Breast and most of underparts yellow, a black crescent on breast, belly whitish. Extreme measurements of 35 specimens from Raleigh: L., 8.60-10.60; W., 4.05-5.05; T., 2.30-3.15.

General Range.—Eastern United States, wintering in the more southern States.

Range in North Carolina.—Whole State in winter, in summer recorded only from portions of the mountain and the coast regions.

This is a common winter visitor in all portions of the State, feeding in open fields and pastures, and to some extent in lowground meadows. It arrives from the north about the middle of October and leaves in April, although individuals have been recorded earlier in fall and later in spring. The summer records are few and scattering. Cairns found but one nest in Buncombe County in five years collecting, while in the east Dr. Smithwick records a single nest found in Bertie County, and states that it is a rare breeder near LaGrange, Lenoir County. C. S. Brimley found the species near Lake Ellis, Craven County, in late May, 1906–8, and late June, 1905. Evidently these birds had settled down for the summer. Joseph Armfield reports finding one or more nests at Greensboro in Guilford County, and Pearson found it a regular summer resident there, but never located a nest.

This species is one of the most insectivorous of the family. Instead of being persecuted as a game bird, it has always deserved the fullest protection because of its value as a destroyer of insects injurious to the farmer's crops. As a destroyer of sprouting corn, the depredations it commits are grossly exaggerated. It is now protected at all times under Federal regulations.

FIG. 173. MEADOWLARK.

The nest is placed on the ground under a tuft of grass, and is compactly made of coarse grass, lined with finer materials. The eggs are four to six in number, of a pure white ground-color, and more or less thickly spotted or dotted with reddish brown or purplish. Size 1.10 x .80. May and June are the nesting months.

The Meadowlark is social in its habits, being found in flocks when not engaged in rearing its young. Its flight is very characteristic, as it proceeds by alternately flapping its wings and sailing. When rising from the ground the tail is usually spread, revealing the white portion of the outer tail-feathers.

206. Sturnella magna argutula (*Bangs*). SOUTHERN MEADOWLARK.

Description.—Similar to the Meadowlark, but size smaller, and colors darker, the yellow of the underparts much more intense, and the upperparts much darker in color, the dark central areas of the feathers being much greater in extent, and the light edges much less; tail and wings darker, the barring on middle tail-quills, and on secondaries, tertials, and wing-coverts, much wider and more pronounced. W., 4.00-4.13; T., 3.00.

Range.—Austroriparian zone from North Carolina (on the coast) and Illinois to Texas, Louisiana, and Florida.

Range in North Carolina.—Coastal region in summer; possibly resident.

This newly recognized subspecies of the Meadowlark finds a place in our list through the range given it by the latest (1910) edition of the American Ornithologists' Union Check List.

In all particulars its habits of life do not differ essentially from those of the foregoing species.

Genus Icterus (Briss.)

This is a numerous genus, many species of which occur in tropical and temperate America. They are usually of bright plumage, the prevailing colors being a combination of black and yellow markings. The bill is sharply pointed, and the birds make use of it to weave the wonderfully neat basket-like structures which serve them for nests.

KEY TO SPECIES

1. Depth of bill at base, decidedly less than half its length. Colors of adult male, black and chestnut. *Orchard Oriole.*
1. Depth of bill at base equal to half its length. Colors of adult male, black and orange. *Baltimore Oriole.*

207. Icterus spurius (*Linn.*). ORCHARD ORIOLE.

Description.—Adult male black, the rump, bend of wing, and lower parts from breast down, deep chestnut. Female yellowish olive. Young male similar to female, but throat is usually black, and there are often other traces of the black and chestnut markings of the adult. Extreme measurements of 64 specimens from Raleigh: L., 6.65-7.50; W., 2.85-3.45; T., 2.65-3.00.

General Range.—Eastern United States in summer, wintering in Central America.

Range in North Carolina.—Whole State in summer, except the higher mountains.

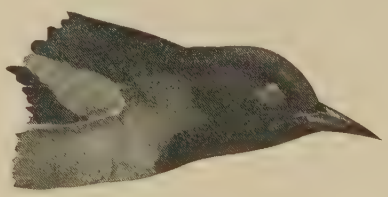


FIG. 174. ORCHARD ORIOLE.

The Orchard Oriole, locally, but erroneously, called "Baltimore Oriole" in this State, is a common summer visitor everywhere east of the mountains, and also in the lower mountain-valleys, but far more abundant in the extreme eastern section; for instance, thousands of these birds are to be found in Hyde County around the shores of Mattamuskeet Lake. It arrives from its winter home in the far South about the last week in April, and leaves us quite early in the season, our latest record being August 22, at Raleigh.

As its name indicates, it prefers orchards and groves, and, like many other birds, is greatly attracted by mulberry trees, the fruit of which it much enjoys in common with Tanagers, Catbirds, Nonpareils, and many others. Its nest is a bag-shaped structure, woven of green grass, which later turns yellow, giving it a very characteristic appearance. Sometimes it is lined with soft materials, but more often, perhaps, this special lining is omitted. The eggs are usually five in number, and are laid in late May or June. They have a bluish ground-color, and are marked

with spots, specks, and irregular lines of various shades of brown. Size .78 x .56. The nesting site is usually chosen among the terminal twigs of small shade or orchard trees, but not infrequently a willow or ironwood growing near a stream is selected. The height from the ground at which seven nests at Raleigh were built ranged from seven to twenty feet.

The Orchard Oriole is almost wholly insectivorous in its diet, and, as it is also a very melodious singer, it is well deserving of human gratitude. It must be understood, however, that simply preventing people from shooting birds will not alone keep their numbers from decreasing, if we at the same time destroy their natural feeding grounds without supplying a substitute. For instance, there was at one time a large orchard of mulberry trees near Raleigh which was the favorite summer resort of numbers of birds. Later the orchard was destroyed, and the birds also disappeared from the locality.

208. Icterus galbula (*Linn.*). Baltimore Oriole.

Description: Ad. male.—Head, neck, throat, and upper back black; breast, belly, lower back, and lesser wing-coverts deep, rich, reddish orange; wings black, the outer margin of the greater coverts and quills edged with white; end-half of middle tail-feathers black, base orange; all the others orange, crossed by a black band in the middle. *Ad. female.*—Upperparts brownish or grayish orange, brighter on the rump; head and back mottled with black; wings fuscous, greater and middle coverts tipped with white; tail like the rump, the middle feathers stained with black; underparts dull orange, throat sometimes spotted with black. L., 7.53; W., 3.52; T., 2.84; B., .70. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding mainly north of North Carolina; winters in Mexico and Central America.

Range in North Carolina.—Whole State sparingly during the migrations, breeding wholly or mainly west of the Blue Ridge.

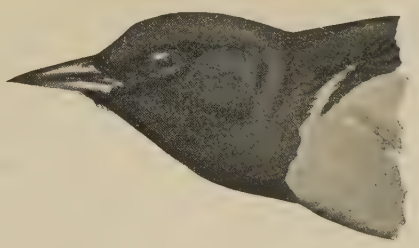


Fig. 175. Baltimore Oriole.

The Baltimore Oriole appears only as a rare migrant in the State, except in the mountains, where it is not an uncommon summer bird west of the Blue Ridge. At Raleigh it has been observed in late April, and at Durham and Chapel Hill in early May, while in fall it has been seen at Raleigh only in late August and early September.

This species builds a deep-woven purse-shaped nest, from vegetable or other fibers, usually attached by the rim to the end of a long, drooping limb of a large tree. In this structure, which is lined with any soft material readily found in the neighborhood, the bird deposits four or five eggs, which much resemble those of the Orchard Oriole.

Like the preceding, this fine bird is a good singer and a determined devourer of insects, and is also deserving of our fullest protection.

Genus Euphagus (Cass.)

209. Euphagus carolinus (*Müll.*). RUSTY BLACKBIRD.

Description.—Adult male in summer, wholly glossy black, unmarked; adult female, brownish slate in summer. Winter birds of both sexes are similar, but have the ground-color more or less overlaid with rusty above and buffy below. Extreme measurements of 19 specimens from Raleigh: L., 8.50-9.65; W., 4.15-4.85; T., 3.16-3.95.

Range.—Eastern North America, breeding mainly north of the United States.

Range in North Carolina.—Whole State during the migrating period of the species; winters to a limited extent in the eastern section.

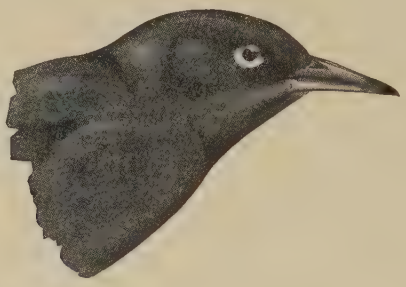


FIG. 176. RUSTY BLACKBIRD.

The Rusty Blackbird occurs in North Carolina mainly when migrating in early spring and late fall, but has been observed at New Bern in early January, 1885 (H. H. Brimley), and at Raleigh, January 25, 1892. Outside of these dates our records are only of evidently migrating birds, the actual dates being at Weaverville, Buncombe County, from February 2 to May 2 (Cairns); at Chapel Hill, February 3, 1889, and later (Pearson); at Pea Island, February 17 and 18, 1901 (Bishop); at Andrews, Cherokee County, February 27 and later (Mrs. Wilson); and at Raleigh from February 15 to April 20 in spring, and from October 17 to November 17 in fall (C. S. Brimley). These last are our only fall records, with the exception of two observed at Chapel Hill, October 17, 1900, by MacNider.

The Rusty Blackbird is not a particularly common bird in the State, never occurring in really large flocks, but usually seen in companies of not more than fifteen or twenty individuals. In autumn they are not infrequently found in woods feeding on dogwood berries. Later they sometimes frequent the lowgrounds to feed on frost grapes. In spring they feed much on the ground in marshy places, among willows or other bushes. At all seasons they seem much easier to approach than other blackbirds.

Genus Quiscalus (Vieill.)

The Crow Blackbirds or Grackles are large blackbirds with tail and wing about equal in length. The bill is stout, and the plumage in both sexes has a more or less metallic luster.

KEY TO SPECIES

1. Color of head and neck not sharply defined against color of body, which has always more or less mixed metallic tints. *Purple Grackle.*
1. Color of head and neck uniform, sharply defined against color of body, which is always perfectly uniform bronze without mixed metallic tints. *Bronzed Grackle.*

210. Quiscalus quiscula quiscula (*Linn.*). PURPLE GRACKLE.

Description.—Iridescent black. Body always with mixed metallic tints; color of head and neck very variable, iridescent bars along back. Female somewhat duller. Extreme measurements of 31 specimens from Raleigh: L., 10.75-12.75; W., 4.85-5.75; T., 4.06-5.45.

Range.—Atlantic coast of United States, south of Connecticut, and east of the Alleghany Mountains; breeding in greater or less numbers throughout its range.

Range in North Carolina.—Whole State, common during the migrations, less common in winter, and breeding locally in all sections.

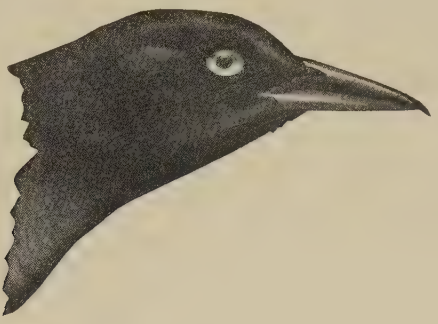


FIG. 177. PURPLE GRACKLE.

The Purple Grackle or Crow Blackbird, easily distinguished from our other inland blackbirds by its larger size, longer tail, and hoarse notes, is not an uncommon bird in most parts of the State during portions of February, March, October, and November, when it is migrating. As a breeding bird it is quite local, though known to breed at Greensboro, in the grounds of the Greensboro Female College; in Craven County below New Bern; on Orton Pond, in Brunswick County, and within the city limits of Asheville. It has also been twice observed near Raleigh in June.

The nest is usually placed in a pine or other coniferous tree, and is often a very bulky structure. Twigs and grass are the materials most commonly used in its construction. Frequently it is situated at a considerable height from the ground, but where suitable trees are not accessible it will be placed in bushes or even in crevices in the sides of the nest of the Osprey. The eggs are four to six, laid in our latitude usually in April or early May. They have a greenish white or rusty brown ground-color, over which are scattered many spots and scratches of black or chocolate. Size 1.18 x .84.

The Purple Grackle is eminently gregarious at all seasons. In spring it often feeds with other blackbirds on the newly sown grain-fields, and later will gather in the tops of tall pines, flying from one to another, and apparently feeding on the pine seeds. It nests in colonies of from ten to twenty or more pairs.

211. Quiscalus quiscula æneus (*Ridgw.*). BRONZED GRACKLE.

Description.—Body always perfectly uniform bronze, without mixed metallic tints, the color sharply defined against the color (steel-blue, bottle-green, etc.) of head and neck. Female duller. Extreme measurements of 11 specimens from Raleigh: L., 11.16-13.00; W., 5.16-5.85; T., 4.50-5.70.
Range.—Temperate North America, from the Rocky Mountains to the Alleghanies, and from the Gulf of Mexico to northern British America, and on the Atlantic Coast from Long Island northward.
Range in North Carolina.—Western and central portions during the migrations only.

So far as we are aware, the Bronzed Grackle appears in this State only as a migrant, specimens having been taken at Raleigh on February 26, 1895, and from November 5 to December 6 in six different years. At Weaverville, Buncombe County, birds were killed by Cairns from March 10 to 30, 1890 (five specimens secured in all).

The Bronzed Grackle which from its more extensive distribution and less variable characters is considered by many to be the original form from which the other subspecies of the genus was derived, has the same habits as the Purple Grackle, with which in fact it is usually found associated in this State, and which it closely resembles.

Genus Megaquiscalus (Cass.)

212. Megaquiscalus major major (*Vieill.*). BOAT-TAILED GRACKLE.

Description.—Male iridescent green and blue. Female dull dusky brown, lighter beneath, very much smaller. Measurements of two males from Beaufort, N. C.: (1) L., 16.00; W., 7.12; T., 7.50; (2) L., 16.12; W., 6.85; T., 6.50. Dimensions of a female from Beaufort: L., 13.75; W., 5.75; T., 5.50.
Range in United States.—South Atlantic and Gulf coasts, from Virginia to Texas.
Range in North Carolina.—On the whole coast, *not inland;* resident.

The Boat-tailed Grackle, commonly and universally known in this State as the "Jackdaw," is found on our coast, where it procures its living along the beaches or in the salt marshes. A large part of its food consists of small crabs, shrimps, or other small sea animals that are washed up by the waves. In North Carolina the species nests in April and May, several pairs often occupying the same tree. The eggs are brownish drab, some tinged with olive, others with green, marked with irregular blotches of brown and black. Size about 1.24 x .81.

The farthest inland the species has been recorded appears to be Plymouth, on Roanoke River, about six miles from Albemarle Sound, where Dr. Smithwick found it nesting in small colonies in April, 1890. For many years there has been a breeding colony of these grackles in the town of Beaufort. The species is notably polygamous.

45. FAMILY FRINGILLIDÆ. FINCHES, SPARROWS, ETC.

This is a very numerous family of small birds, containing many of our most familiar species.

The most distinguishing feature of the birds of this group is the conical bill. It is stout at the base and pointed at the tip, and with the corners of the mouth drawn sharply downward.

BOAT-TAILED GRACKLE. Megaquiscalus major major (Vieill.) Male and Female.

KEY TO GENERA

1. Mandibles falcate, crossed at tip. *Loxia.*
1. Mandibles not falcate, not crossed at tip. See 2.
2. Head crested, bill very large. *Cardinalis.*
2. Head not crested; bill various. See 3.
3. Bill very large. See 4.
3. Bill moderate. See 5.
4. Color blue or brownish, unstreaked. *Guiraca.*
4. Color black, varied with white and red, or olive-brown with whitish stripes on head. *Zamelodia.*
5. Gonys distinctly convex in profile, plumage streaked above, not below, no blue nor yellow. *Passer.*
5. Gonys straight or nearly so. See 6.
6. Primaries much longer than secondaries. See 7.
6. Primaries not much longer than secondaries. See 13.
7. Wing at least five times as long as the short tarsus. See 8.
7. Wing not five times as long as tarsus. See 11.
8. Wing more than 3½ inches, tail largely white. *Plectrophenax.*
8. Wing less than 3½ inches. See 9.
9. Tail ¾ as long as wing, nasal tufts conspicuous. *Acanthis.*
9. Nasal tufts inconspicuous; tail less than two-thirds wing. See 10.
10. Tail-feathers blotched with white. *Astragalinus.*
10. Tail-feathers blotched with yellow at base. *Spinus.*
11. Tail without white. *Carpodacus.*
11. Tail blotched with white. See 12.
12. Middle tail-feathers narrow and pointed, hind claw long and straight. *Calcarius.*
12. Middle tail-feathers broad and rounded, hind claw short and curved. *Chondestes.*
13. Tail-feathers, at least the outer ones, blotched with white. See 14.
13. Tail-feathers not blotched with white. See 16.
14. Breast streaked. *Poœcetes.*
14. Breast dark, not streaked. See 15.
15. Length 7 or more, wings with white blotch. *Pipilo.*
15. Length 6.25 or less, wings without white. *Junco.*
16. Tail-feathers narrow, at least the middle ones acuminate, back streaked. See 17.
16. Tail-feathers broader, not acuminate. See 20.
17. Breast with yellow, throat with more or less black. *Spiza.*
17. Breast without yellow, throat without black. See 18.
18. Outer pair of tail-feathers longer than middle pair, wing much longer than tail. *Passerculus.*
18. Outer pair of tail-feathers shorter than middle pair, wing not much, if any, longer than tail. See 19.
19. Tail double rounded, the middle pair of quills much shorter than the next pair. *Ammodramus.*
19. Tail graduated, the middle tail-feathers the longest. *Passerherbulus.*
20. Hind claw decidedly longer than its toe; plumage streaked above and below. *Passerella.*
20. Hind claw scarcely longer than its toe. See 21.
21. Plumage more or less blue in male, lower mandible much deeper than upper. *Passerina.*
21. Plumage streaked, no blue, lower mandible not deeper than upper. See 22.
22. Tail more or less forked, the middle feathers the shortest, plumage unstreaked below, no yellow. *Spizella.*
22. Tail rounded. See 23.
23. Primaries exceeding secondaries by more than length of bill, head striped in adult. *Zonotrichia.*
23. Primaries exceeding secondaries by not more than length of bill. See 24.
24. Edge of wing yellow, plumage unstreaked below. *Peucœa.*
24. No yellow anywhere, plumage streaked below, or else crown chestnut. *Melospiza.*

Genus Carpodacus (Kaup)

213. Carpodacus purpureus purpureus (*Gmel.*). PURPLE FINCH.

Description.—Ad. ♂.—Body streaked, suffused with rose-red, strongest on the head, rump, and breast, more brownish on the back; whiter, generally white, on the belly; wings and tail brownish fuscous, the outer webs of the feathers finely edged with rose-red; a small tuft of bristly feathers over the nostrils; *outer* tail-feathers longest. This plumage is acquired at the first post-

nuptial molt. *Ad.* ♀.—Very different, sparrowlike in appearance; upperparts dark grayish brown, finely streaked with black; wings and tail dark grayish brown; underparts white, streaked, or with wedge-shaped spots of fuscous. A whitish superciliary line. *Im.* ♂.—Similar to adult female. L., 6.22; W., 3.24; T., 2.29; B., .45.

Remarks.—Females and young males bear a decided resemblance to some sparrows, but the rounded bill, tufts of feathers over the nostrils, and forked tail are distinguishing characters. (Chap., *Birds of E. N. A.*)

Range in United States.—Eastern North America, breeding from northern United States northward.

Range in North Carolina.—Whole State in winter, but may possibly breed in the mountains.

FIG. 178. PURPLE FINCH.

The Purple Finch, so called from the erroneous coloring given it in an early plate of the species, is an irregular winter visitor in the central portion of the State. Cairns recorded it as a spring transient in Buncombe County, giving the following dates of its appearance: February 7, March 5 to May 5. Mrs. Donald Wilson reports it as a winter resident at Andrews, in Cherokee County, much farther south, giving for it the extreme dates of November 18 to April 28. In central North Carolina it occurs more or less regularly from the last week of October to the middle of April, and sometimes a little later, the latest spring date being April 30 and the earliest fall date October 27. Still later dates than any of the above are May 9, 1908, at Highlands, a small flock observed by Sherman and C. S. Brimley, and May 23, 1885, at Old Fort, a number observed by Brewster, who says they were apparently not breeding, despite the lateness of the season.

The Purple Finch is most commonly found in small flocks, feeding either on buds or seeds of trees; sometimes it may be seen eating weed-seeds in open thickets or on the ground. It is particularly partial to the seeds of the tulip tree, and also enjoys the seeds and buds of elms.

The nest is said to be built in small trees at no great height from the ground, and is composed of weed stems, grasses, and similar materials, lined with hair, being not unlike that of the Chipping Sparrow in its construction.

Genus Loxia (Linn)

This is a small genus of finches distinguished by the two mandibles being curved, and crossed at the tips. Two species occur, but not commonly with us.

KEY TO SPECIES

1. Wings without white bars. *Crossbill.*
1. Wings with two white bars. *White-winged Crossbill.*

214. Loxia curvirostra minor (*Brehm*). CROSSBILL.

Description.—Male brick red, female brownish, washed with greenish yellow. No white wing-bars in either sex. Tips of mandibles crossed. Extreme measurements of 5 Raleigh specimens: L., 6.00-6.50; W., 3.40-3.70; T., 2.00-2.20.

Range in America.—North America, chiefly far northward, breeding sporadically to Virginia on the coast, and to northern Georgia in the mountains.

Range in North Carolina.—Resident on some of the higher mountains; a winter visitor in the central portion of the State.

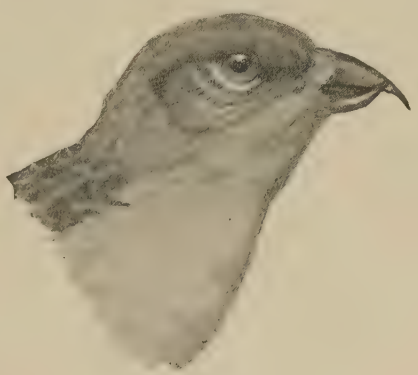


FIG. 179. CROSSBILL.

The Crossbill has been taken at Raleigh January 16 and 26, and February 8, 1897; March 11 and 23, 1885; May 9, 1907; and June 5, 1887. In Buncombe County Cairns recorded it as a resident, breeding on the Black Mountains; and Rhoads heard it on Roan Mountain in late June, 1895.

The nesting period is said to be in winter or very early spring, while the snow is still on the ground. The nest is usually found in a coniferous tree. The eggs are pale greenish, spotted and dotted about the larger end with various shades of lavender and brown. Size .75 x .57.

The birds travel in small flocks and feed on various seeds, the peculiarly shaped bills being well adapted for the purpose of tearing pine-cones asunder.

215. Loxia leucoptera (*Gmel.*). WHITE-WINGED CROSSBILL.

Description.—Male rose-red; female brownish olive, wings with two white wing-bars; mandibles crossed at tips. L., 6.25; W., 3.50; T., 2.65.

Range.—Northern North America, breeding from northern New England northward. South in winter to North Carolina.

Range in North Carolina.—So far, only taken at Raleigh in winter.

Three specimens of the White-winged Crossbill were killed by Bruner, February 23, 1907, while they were feeding on cedar-berries near the Agricultural and Engineering College at Raleigh. Bruner had no gun with him, but in his scientific longing to discover the identity of these queer-looking birds, he picked up three

stones and threw them in quick succession at the flock. Strange to say, he killed a bird with each stone, and all three specimens are now in the possession of the State Museum, two being preserved as mounted specimens and one as a skin. We have no other record of the appearance of the White-winged Crossbill in North Carolina.

Its habits are said to be similar to those of the more common species. Both are rather erratic wanderers.

Genus Acanthis (Borkh.)

216. Acanthis linaria linaria (*Linn.*). REDPOLL.

Description.—Adult male with throat, breast, rump, and crown red, otherwise streaky above, lower parts whitish; adult female has crown red, but lacks the red on other parts. Young are without red. L., 5.75; W., 3.00; T., 2.50.

Range.—Northern America, south in winter to Indiana and Pennsylvania, in flocks.

Range in North Carolina.—Known only by a single specimen taken on Pea Island.

FIG. 180. REDPOLL.

The Redpoll or Redpoll Linnet has been recorded by Bishop, from Pea Island, under date of December 10, 1908, and by Ludlow Griscom, from Currituck Sound, as follows: "Two birds, December 31, 1916, feeding in the bushes on beach opposite Pamunky Island, in company with Savannah and Ipswich Sparrows, so tame that we could walk up within six feet of them. Tried to collect them with a fence rail, but unsuccessfully. One seen same place next day. Seen by J. M. Johnson, J. T. Nicholls and L. G."

Genus Astragalinus (Cab.)

217. Astragalinus tristis tristis (*Linn.*). GOLDFINCH.

Description: Ad. ♂ in summer.—Bright canary-yellow; crown, wings and tail black; wing-bars and inner vanes of tail-feathers white; longer upper tail-coverts gray; *lesser wing-coverts yellow.* This plumage is acquired at the second prenuptial molt. *Ad. ♂ in winter.*—Wings and tail as in summer, but white edgings wider, *lesser wing-coverts still yellow;* back grayish brown, olive-tinged; throat and chest dull yellow, belly whitish, sides brownish buff. *Im. ♂ in winter.*—Similar to ad. ♂ in winter, but lesser wing-coverts olive-green or olive-gray. *Im. ♂ in summer.*—Similar to ad. ♂ in summer, but lesser wing-coverts as in winter. *Ad. ♀ in summer.*—No black crown-cap; upperparts yellowish brown; below dull yellow; wings and tail less black than in ad. ♂; lesser wing-coverts olive-green. *Ad. ♀ and Im. ♀ in winter.*—Similar to im. ♂ in winter, but wings and tail less black. L., 5.10; W., 2.82; T., 1.95; B., .40. (Chap., *Birds of E. N. A.*)

Range.—Resident throughout the whole of temperate North America.

Range in North Carolina.—Resident, except in the east, where it is only a winter visitor.

The Goldfinch, also known as Wild Canary, Lettuce-Bird, and Thistle-Bird, is a common resident throughout the State, except in the eastern portion, where it appears to be only a winter visitor, arriving there in October and leaving in May. In central North Carolina it is much more abundant in winter than in summer.

Its nesting season is in July and August, which is much later than most other small birds breed. The nest is a beautiful, compact structure composed of vegetable fibers, moss, grasses, leaves, and fine strips of bark felted together and lined inside with plant down. The eggs vary from four to six in number. They are pale bluish or greenish white, and are unspotted. Size .65 x .52. The nest is usually placed in a small tree, and the height varies from three to forty feet from the ground. At Raleigh it is a common summer bird within the city limits.

Fig. 181. Goldfinch.

The Goldfinch is a confirmed eater of many kinds of small seeds, including those of the thistle, sunflower, turnip, trumpet-vine, chickweed, zinnia, lettuce, and dandelion.

Genus Spinus (Koch)

218. Spinus pinus pinus (*Wils.*). Pine Siskin.

Description.—Plumage streaked with brown, suffused with yellow in the breeding season. Bases of wing and tail-quills yellow. Measurements of 21 Raleigh and 1 Weaverville specimens: L., 4.60-5.12; W., 2.75-3.06; T., 1.60-1.95.

Range.—Northern North America, breeding northward, and in the mountains; south in winter, occasionally to the Southern States.

Range in North Carolina.—Irregular winter visitor in most parts of State, breeding on a few of the highest mountains.

The Pine Siskin occurs irregularly throughout the State in winter. At Raleigh it was more or less common each winter from 1884 to 1890, was there again in 1896–7, and also from 1906 to 1909, but was not observed during the intervening winters. In the spring of 1911, it was abundant at Raleigh and Chapel Hill, and was noted as late as May 11 at the former and May 6 at the latter place. It has been recorded at Pea Island (large flock seen by Bishop, December 14, 1908); at Roan Mountain (noted by Rhoads up to 3,500 feet in late June, 1885); and in Bun-

combe County (where Cairns found it a common winter visitor, and also observed it nesting on Black Mountain).

In winter Pine Siskins go in flocks, feeding on various seeds and berries, including those of the alder, pine, cedar, and trumpet-vine. At Raleigh C. S. Brimley has found them most frequently eating alder seeds.

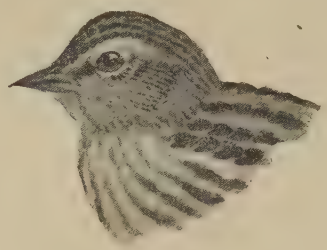


FIG. 182. PINE SISKIN.

The nest is said to be built in a coniferous tree as a rule, at a height of about twenty-five feet from the ground. It is made of dry grasses and pine needles with a lining of feathers, fine rootlets, or hair. The eggs are greenish white or pale greenish blue in ground-color, spotted with various shades of brown, but usually quite faintly marked. Average size .63 x .50. The usual complement of eggs is three or four.

Ludlow Griscom writes: "Don't know how often Siskins reach North Carolina, but saw eighteen on January 1, 1917; flock of ten near Currituck Court House, and a flock of five and three singles flying south over the beach earlier in the day."

Genus Passer (Briss.)

219. Passer domesticus domesticus (*Linn.*). ENGLISH SPARROW.

Description: Ad. male.—Crown gray, bordered from the eye backward and on the nape by chestnut; lesser wing-coverts chestnut, middle coverts tipped with white; back streaked with black and chestnut; rump ashy; middle of the throat and breast black; sides of the throat white; belly whitish. *Ad. female.*—Head and rump grayish brown; back streaked with black and deep ochraceous-buff; underparts dirty whitish, the breast and sides washed with pale grayish brown. L., 6.33; W., 3.01; T., 2.30; B., .48. (Chap., *Birds of E. N. A.*)

Range in United States.—Nearly all inhabited districts.

Range in North Carolina.—Virtually the whole State, especially in towns and villages.

The English Sparrow, more correctly named the European House Sparrow, is an abundant bird in the more thickly settled parts of the State, and, so far as we are aware, first appeared at Raleigh about 1879, since which time it has steadily increased both in numbers and extent of territory occupied. At present, so far as we know, Highlands, Macon County, is the only town of any size where it does not now occur. At Blowing Rock in Watauga County, another mountain town, it did not appear until 1907. However, there is no doubt that it will shortly reach the few settled localities where it has not yet established itself.

Although universally considered to be a nuisance, this bird has some redeeming qualities. It will devour cabbage-worms to a considerable extent, and has also

been credited in this State with destroying the harlequin cabbage-bug. The nest, which is built among the branches of trees or placed in any convenient hole or crevice about a building, is a large, untidy structure of grass, weed stems, or other available material, and is well lined with feathers. Two or three broods are raised in a season. The eggs number from four to six and are usually more or less spotted.

The laws of the State do not protect this bird, and it is almost universally regarded as a nuisance, as it drives our native birds out of the towns into the country, where they more readily fall a prey to their natural enemies.

Genus Plectrophenax (Stejn.)

220. Plectrophenax nivalis nivalis (*Linn.*). Snow Bunting.

Description: Ad. male in summer.—Whole head and neck, rump, and underparts white; back and scapulars black; outer primaries black, white basally, secondaries wholly white; outer tail-feathers white; inner ones black. *Ad. female in summer.*—Similar, but upperparts streaked with black; outer primaries all fuscous; secondaries more or less tipped with fuscous. *Male in winter.*—Upperparts a kind of rusty brown, almost umber on the center of the crown; back streaked with black, caused by the black bases of the feathers showing through their rusty tips; wings and tail much as in summer, but more or less edged with rusty; underparts white, the breast and sides washed with rusty. *Female in winter.*—Similar to male, but wings as in summer. L., 6.88; W., 4.07; T., 2.70; B., .42. (Chap., *Birds of E. N. A.*)

Range.—Circumpolar regions, south in winter regularly to northern United States.

Range in North Carolina.—Occasional winter straggler.

Fig. 183. Snow Bunting.

The Snowflake or Snow Bunting is a bird of the far North, visiting the Northern States in large flocks in winter. In North Carolina it has been recorded only twice. Bishop took three specimens at Pea Island, Dare County, on February 14, 1901, and Mr. Bainbridge Wilson, Route No. 3, Vienna, Va., took a specimen at Oriental, N. C., on January 26, 1918. (Reported to Pearson by Dr. Charles W. Richmond, of Washington, D. C., under date of September 27, 1918.)

Genus Calcarius (Bechst.)

221. Calcarius lapponicus lapponicus (*Linn.*). Lapland Longspur.

Description.—Hind toe-nail as long as or longer than toe. *Ad. male in summer.*—Head, neck, throat, and breast black; a buffy line behind the eye; nape rufous; back streaked with black and

ochraceous- and cream-buff; tail fuscous, the two outer feathers with more or less white; belly white; sides streaked with black. *Ad. female in summer.*—Upperparts streaked with black, rufous, ochraceous- and cream-buff; nape ochraceous-buff, the color sometimes concealed by the tips of the feathers; tail fuscous, the outer one or two feathers marked with white; underparts white, the breast and sides streaked with black and ochraceous-buff. *Male in winter.*—Similar to female in summer, but upperparts blacker, nape more rufous, breast more heavily marked with black, most of the feathers black at the base. *Female in winter.*—Similar to female in summer, but upperparts duller, nape with little or no ochraceous. L., 6.25; W., 3.75; T., 2.55; B., .40.

Remarks.—In some plumages this bird bears a general resemblance to certain sparrows, but differs from them in having the hind toe-nail as long as or longer than the toe. (Chap., *Birds of E. N. A.*)

Range.—Circumpolar regions, south in winter over most of the United States.

Range in North Carolina.—So far, only taken at Raleigh.

The Lapland Longspur, also known as the Lapland Bunting, has been taken at Raleigh on January 13 and 14, 1893 (one each day), and on February 20, 1895 (four secured). All the specimens were in company with flocks of Horned Larks, and all were secured in the same field.

Like the preceding species, the Longspur usually congregates in large flocks. It ranges much farther south in the flat country west of the Mississippi than it does on the Atlantic Slope.

Genus Poœcetes (Baird)

222. Poœcetes gramineus gramineus (*Gmel.*). VESPER SPARROW.

Description: Ads.—Upperparts brownish gray, streaked with black and a little ochraceous-buff; wings fuscous, greater and middle coverts tipped with white, lesser coverts bright rufous; tail fuscous, the outer feather mostly white, the next one much less white; underparts white; the breast and sides streaked with black and ochraceous-buff. L., 6.12; W., 3.06; T., 2.38; B., .41.

Remarks.—The white tail-feathers and rufous lesser wing-coverts will always distinguish this species from any other of our sparrows. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States, breeding mainly north of North Carolina.

Range in North Carolina.—Winter visitor in the central and eastern sections; resident in at least portions of the mountain region.

FIG. 184. VESPER SPARROW.

The Vesper Sparrow, also known as the Bay-winged Bunting and Grass Finch, is a common winter visitor in open fields in most parts of the State. Cairns called it a resident in Buncombe County, and further stated that it is usually found on high pasture land, where it commences to breed in April. Arnfield took a set of its eggs near Greensboro on June 1, 1893. Sherman and C. S. Brimley found it apparently settled down to breed at Blantyre, Transylvania County, in early May, 1908, and Bruner reported it as fairly common at Blowing Rock in the summers of 1905 and 1907.

In eastern North Carolina the Vesper Sparrow arrives near the middle of October and leaves about April 15, though it has been once observed as late as May 11 at Raleigh.

The nest is built on the ground at the foot of a small bush or weed, and is composed of grass with a lining of hair. The eggs are commonly four in number, of a pale pinkish-, greenish-, or grayish-white ground-color, marked with blotches, dots, and lines of various shades of rusty brown. Size .80 x .60.

On the wing this bird is easily distinguished from other small sparrows by the white outer tail-feathers, which ordinarily are plainly evident when the bird is in flight.

Genus Passerculus

A genus of small ground-sparrows, with the tail-feathers neither stiff, nor marked with white. Three forms have been recorded from the State.

KEY TO SPECIES

1. Superciliary stripe white in front; wing usually over 2⅛ inches. *Ipswich Sparrow.*
1. Superciliary stripe yellow in front; wing usually under 2⅛ inches. See 2.
2. Bill stout, averaging .24 deep at base. *Savannah Sparrow.*
2. Bill less stout, averaging .21 deep at base. *Western Savannah Sparrow.*

223. Passerculus princeps (*Mayn.*). Ipswich Sparrow.

Description: Ads.—Usually with a spot of sulphur-yellow before the eye and on the bend of the wing; upperparts pale brownish-ashy, streaked on the head, back, and upper tail-coverts with black and cinnamon-brown; the nape and rump with few or no streaks; a white line over the eye; wings grayish brown, outer webs of greater coverts and tertials margined with pale ochraceous-buff; tail grayish brown, the outer webs of the feathers margined with brownish-ashy; underparts white; breast and sides lightly streaked with blackish and ochraceous-buff. L., 6.25; W., 3.00; T., 2.25; B., .40. (Chap., *Birds of E. N. A.*)

Range.—Atlantic coast of United States, breeding on Sable Island; south in winter as far as North Carolina.

Range in North Carolina.—At present only recorded from Pea and Bodie islands, and from Currituck County.

The Ipswich Sparrow is a rather large, pale-colored sparrow, occurring along the Atlantic coast, and in this State is known as a winter visitor on Pea and Bodie islands, where Bishop found it to be common in February, 1901. It has also been noted on January 2, 1915, in Currituck County. (*Bird-Lore*, 1915, p. 36.)

224. Passerculus sandwichensis savanna (*Wils.*). Savannah Sparrow.

Description: Ads.—A pale yellow mark over or before the eye and on the bend of the wing; general tone of the upperparts brownish black, the centers of the feathers black, margined first by rufous or ochraceous-buff, then by ashy; wings fuscous, the outer webs of the feathers margined with ochraceous-buff; tail fuscous, the outer web of the feathers margined with whitish; underparts white, heavily streaked with blackish and rufous, the breast-feathers tipped with wedge-shaped marks. *Ads. and Im. in winter.*—Similar, but color deeper, more suffused with ochraceous. L., 5.68; W., 2.62; T., 2.09; B., .40. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding from northern United States northward.

Range in North Carolina.—Winter visitor throughout the State, especially common immediately along the coast.

The Savannah Sparrow occurs at Raleigh from October until early May, being found in small numbers in almost any grassy situation. At Fort Macon Coues

reported it as very abundant everywhere outside of the marsh during the same period of the year. At Pea Island Bishop reported it the most abundant bird in February, 1901. At Weaverville, in Buncombe County, Cairns called it a common winter visitor, and in his migration schedule reports it from August 20 to April 24, adding the remark that it breeds on the higher mountains. The earliest fall record for Raleigh is September 16, 1887; but this is unusually early, for the time of arrival is generally in October.

FIG. 185. SAVANNAH SPARROW.

The nest is said to be sunken in the ground, and well concealed among weeds and grass, being nothing more than an arrangement of grasses in concentric rings, the rim being flush with the ground. The eggs are four or five in number. They are of a greenish or grayish-white ground-color, speckled and blotched with light brown and lilac, particularly about the larger end, the markings being often so numerous that they almost conceal the ground-color. Size .75 x .35.

The Savannah Sparrow is a shy bird, hiding close in the grass until flushed by a near approach. In the spring it is often found on wet meadows, but during the rest of the winter is confined mainly to dry uplands.

The Western Savannah Sparrow, *Passerculus sandwichensis alaudinus* (Bonap.), is more gray in color than the eastern form. H. L. Coggins (see *Auk*, Oct., 1901, p. 397) states that 14 Savannah Sparrows collected by H. H. and C. S. Brimley at Raleigh, and forming part of the Hoopes collection in the Academy of Natural Sciences in Philadelphia, belong to this form. He also thinks that they may be merely transients, as none of the specimens were taken in February or March; but this is a mistake, as Savannah Sparrows occur here every month from October to May, both inclusive. Possibly, if Mr. Coggins is correct, all our Raleigh specimens belong to this form. Bishop records taking a young male of this form on Pea Island, December 14, 1908. Ridgway and Oberholser, however, upon examining the specimen, both pronounced it the eastern form. The 1910 edition of the *American Ornithologists' Union Check List* does not give this bird as ever having occurred east of the Mississippi River.

Genus Ammodramus (Swains.)

225. Ammodramus savannarum australis (*Mayn.*). GRASSHOPPER SPARROW.

Description.—Much streaked above; breast buffy, usually, but not always, unstreaked; edge and bend of wing and line over eye yellow. Measurements of 40 specimens from Raleigh: L., 4.90-5.35; W., 2.18-2.55; T., 1.50-1.95.

Range.—Eastern North America, wintering in extreme southern portion.

Range in North Carolina.—Central and western portions in summer.

This little sparrow has been recorded in North Carolina only from Raleigh westward to the mountains, and does not seem to be common anywhere. Being an inhabitant of upland grass-fields, a State so lacking in pastures as North Carolina furnishes scant inducements for it to remain long with us. So far it has been found breeding only at Weaverville, Buncombe County (Cairns); Blantyre, Transylvania County (C. S. Brimley); Franklin, Macon County (Brewster, 1885); Greensboro (Armfield); and Raleigh (S. C. Bruner). Sherman and C. S. Brimley observed it in May, 1908, near Andrews, Cherokee County.

At Raleigh it occurs from April until mid-August, and H. H. and C. S. Brimley have taken specimens here on March 25 and October 22 also. At Weaverville Cairns recorded it as arriving on April 18 for two consecutive years.

Fig. 186. Grasshopper Sparrow.

The nest is built on the ground, and Bruner describes two nests, which he found at Raleigh in 1908, and which contained young birds, as being "rather large inside and quite flimsily constructed of grass." One was placed in a depression in the ground and the other was tucked under the edge of a clod. Both were in old fields. The eggs are of a clear white ground-color, spotted more or less thickly with pale reddish brown, chiefly about the larger end. Size about .75 x .55.

The Grasshopper Sparrow, also known as the Yellow-winged Sparrow, is a stout, plump little bird with almost ridiculously short wings and tail. Its song, from which it derives its name, is so exactly like that of some kinds of grasshoppers that it requires a practised ear to detect the difference.

Genus Passerherbulus (Mayn.)

This genus contains a number of small field- and marsh-haunting sparrows, mostly with more or less stiffened tail-feathers, and with the tail graduated, the central feathers longer than the outermost ones.

Several species occur in our State, one of these being represented by two or three subspecies.

KEY TO SPECIES

1. Crown with a distinct median stripe. See 2.
1. Crown without a distinct median light stripe. See 3.
2. Breast unstreaked. *Leconte's Sparrow.*
2. Breast streaked. *Henslow's Sparrow.*

3. No yellow spot before eye. See 4.
3. A yellow spot before eye. See 5.
4. Colors of upperparts sharply contrasted; chest usually deep buffy, not decidedly streaked. *Nelson's Sparrow.*
4. Colors of upperparts not sharply contrasted; chest often nearly white, sharply streaked with blackish. *Sharp-tailed Sparrow.*
5. Breast and flanks streaked with bluish gray; upperparts greenish olive, margined with bluish gray. *Seaside Sparrow.*
5. Breast and flanks streaked with dusky. See 6.
6. Upperparts deep black margined with olive. *Macgillivray's Seaside Sparrow.*
6. Upperparts dull black margined with greenish olive. *Scott's Seaside Sparrow.*

226. Passerherbulus henslowi henslowi (*Aud.*). HENSLOW'S SPARROW.

Description: Ads.—Top and sides of head and nape dull, pale olive-green, more buffy in the fall; sides of crown black; nape finely streaked with black; back rufous-brown, the feathers with narrow, central, wedge-shaped, black streaks, and narrow ashy margins; bend of wing pale yellow, wing-coverts, much like back; tail-feathers very narrow and sharply pointed, middle feathers rufous-brown, the outer ones much the shortest; underparts white, more or less washed with buffy and streaked with black on the breast and sides. Nestlings have no spots on the breast. L., 5.00; W., 2.20; T., 2.00; B., .42.

Remarks.—The peculiar olivaceous color of the head and nape, and the bright rufous-brown color of the back, wing-coverts, and middle tail-feathers, are the best distinguishing marks of this species. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States, west to edge of Great Plains; winters in Gulf States.

Range in North Carolina.—So far, only known as a spring migrant at Raleigh and Weaverville.

FIG. 187. HENSLOW'S SPARROW.

Henslow's Sparrow is a bird of much the same general form as the Grasshopper Sparrow, but of a more buffy color. It has been taken in this State only at Weaverville, in Buncombe County, where a single specimen was killed by Cairns April 19, 1890; and at Raleigh, from which place it has been recorded by H. H. and C. S. Brimley in seven different years, the earliest being 1893 and the latest 1909. Nine specimens in all were taken at various dates between March 18 and May 3. These were found mainly in dry fields, but a few were located along the edges of marshes.

227. Passerherbulus leconteï (*Aud.*). LECONTE'S SPARROW.

Description: Ads.—No yellow before the eye or on the bend of the wing; a broad ochraceous-buff line over the eye, and a cream-buff line through the center of the blackish crown; nape rufous-brown, each feather with a small black central spot and an ashy border; back black, the feathers margined first by rufous, then cream-buff and whitish; tail grayish brown, with a slight rufous tinge, darker along the shaft, the feathers narrow and sharply pointed, the outer ones much the shortest; breast and sides tinged with buffy, and more or less streaked with black; belly white. L., 5.00; W., 2.00; T., 2.05; B., .35. (Chap., *Birds of E. N. A.*)

Range.—Great Plains and more western prairies, wintering on the Gulf coast, casually in winter and the migrations to the South Atlantic States.

Range in North Carolina.—So far, known only as a straggler at Raleigh.

The only specimen of Leconte's Sparrow so far recorded from North Carolina was taken by C. S. Brimley on the edge of a marsh near Raleigh, April 21, 1894. It can be expected to occur only as an accidental migrant or a winter visitor.

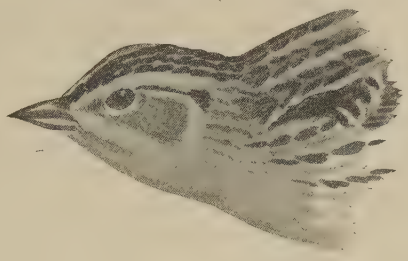


FIG. 188. LECONTE'S SPARROW.

228. **Passerherbulus caudacutus** (*Gmel.*). SHARP-TAILED SPARROW.

Description: Ads.—General color of the upperparts a brownish olive-green; crown olive-brown, with a blue-gray line through its center; gray ear-coverts, inclosed by ochraceous-buff lines, one of which passes over the eye and one down the side of the throat; feathers of the back margined with grayish and sometimes whitish; bend of the wing yellow; tail-feathers narrow and sharply pointed, the outer feathers much the shortest; breast and sides washed with buffy, paler in summer, and distinctly streaked with black; middle of the throat and belly white or whitish. "L., 5.85; W., 2.30; T., 1.90; B., .50"—(DWIGHT). (Chap., *Birds of E. N. A.*)

Range.—Salt-marshes of Atlantic coast from Nova Scotia to North Carolina.

Range in North Carolina.—Salt-marshes of coast; so far, only recorded from the Beaufort region and northward.

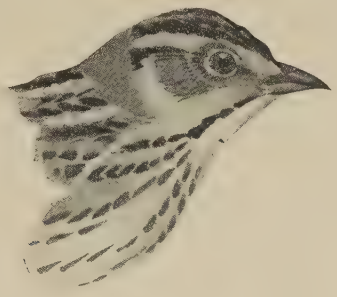


FIG. 189. SHARP-TAILED SPARROW.

The Sharp-tailed Sparrow is known in this State as a winter visitor in the neighborhood of Beaufort and on Pea Island. Coues records it at the former place as abundant from October until May, some occurring in September. Bishop says it is a rather common winter resident in the marshes of Pea Island, giving the date of May 11 (in 1901) as its latest spring appearance. Smithwick calls it a common summer resident in the marshes of the northeastern section of the State.

229. **Passerherbulus nelsoni nelsoni** (*Allen*). NELSON'S SPARROW.

Description.—Similar to *caudacutus*, but smaller, the upperparts darker, the feathers of the back more olive-brown and more broadly margined with whitish; the throat, breast, and sides deeper ochraceous-buff, very slightly, if at all, streaked with blackish. "L., 5.50; W., 2.25; T., 1.90; B., .43"—(DWIGHT). (Chap., *Birds of E. N. A.*)

Range.—Mainly fresh-water marshes of Mississippi Valley, east in winter to Atlantic coast.

Range in North Carolina.—So far, only known from Pea Island.

Nelson's Sparrow is known in this State so far only from Pea Island, where Bishop found it rather common on February 7–18, 1901, and May 10, 1902. This bird is found chiefly in the interior and occurs only as a migrant on our coast, where it may be looked for in company with the Sharp-tailed Sparrow, which it closely resembles.

230. Passerherbulus maritimus maritimus (*Wils.*). SEASIDE SPARROW.

Description: Ads.—A yellow line before the eye and on the bend of the wing; upperparts grayish olive-green; tail grayish brown, the outer webs of the feathers margined with olive-greenish; a dusky line from the base of the lower mandible passes down the sides of the throat; breast more or less suffused with buffy (wanting in summer specimens), and indistinctly streaked with grayish; throat and middle of the belly white; sides grayish. L., 6.00; W., 2.50; T., 2.20; B., .60. (Chap., *Birds of E. N. A.*)

Range.—Salt-marshes of Atlantic coast.

Range in North Carolina.—Salt-marshes of coast, apparently only a winter visitor.

FIG. 190. SEASIDE SPARROW.

This, the typical or first-named subspecies of the Seaside Sparrows, is not definitely known to breed in North Carolina, and it is uncertain to which of the three geographical races found in the State the following records refer.

Coues recorded the Seaside Sparrow as abundant in the marshes near Beaufort, where it breeds abundantly, retiring in April from the interior of the marsh to place its nest among the bushes on shore. Pearson discovered a nest with four eggs in Dare County (New Inlet), on May 13, 1898, and found the birds to be plentiful. Dr. Smithwick reported it from a marsh near Plymouth, May 15, 1891, and H. H. Brimley took specimens near Beaufort in June, 1896, and July, 1894. Bruner collected breeding specimens at Beaufort in the summer of 1910.

In habits the bird is shy, and it is said to be hard to flush, as is the case with nearly all of the genus: "They climb the reeds with remarkable ease, sliding up and down, skipping from one to another, and hanging in every attitude except head downwards; they are doubtless much aided by the somewhat stiffened tail. On the ground they are unmistakably sparrow-like and always proceed by hopping; the flight does not differ noticeably from that of their several near allies. It is irregular and very quick and they never remain long on the wing." (Coues, *Natural History of Fort Macon, N. C.*, No. 1. *Proc. Acad. Nat. Sc. of Philadelphia*, May 2, 1871.)

231. Passerherbulus maritimus macgillivraii (*Aud.*). MACGILLIVRAY'S SEASIDE SPARROW.

Description.—Size and general appearance of preceding, differing in having the feathers of the back deep black, bordered by greenish olive, and margined with bluish gray, and in having the flanks and sides streaked with dusky instead of with bluish gray.
Range.—Imperfectly known, but found in the salt-marshes of at least the Carolinas and Georgia.
Range in North Carolina.—Salt-marshes probably of our whole coast.

Macgillivray's Seaside Sparrow is known to be a summer resident on Pea Island, where it breeds in late May; Bishop has also taken a few there in winter.

The eggs are said to be usually four in number, whitish in ground-color, and speckled or spotted with brown.

232. Passerherbulus maritimus peninsulæ (*Allen*) SCOTT'S SEASIDE SPARROW.

Description.—Differs from the two preceding in having the feathers of back dull black margined with greenish olive; the flanks and breast are streaked with dusky.
Range.—Salt-marshes of South Atlantic States, breeding from Florida to the Carolinas.
Range in North Carolina.—Salt-marshes near Beaufort.

Scott's Seaside Sparrow claims a place in our list on the strength of a breeding specimen in the United States National Museum, taken by Coues at Fort Macon, April 15, 1869, and referred by Frank M. Chapman to this form. The different forms are said to be very hard to distinguish except in the unworn winter plumage.

(For further particulars about the Seaside Sparrows, see Chapman, *The Seaside Sparrows, Auk*, Jan., 1899.)

FIG. 191. LARK SPARROW.

Genus Chondestes (Swains.)

233. Chondestes grammacus grammacus (*Say*). LARK SPARROW.

Description.—Streaky above, white below; a black streak on each side of the white throat; a black spot on the breast; tail-feathers, except middle pair, broadly tipped with white. L., 6.40; W., 3.50; T., 2.80.
Range.—Mississippi Valley, casually to Atlantic coast.
Range in North Carolina.—So far, only known from Raleigh and Cranberry.

The Lark Sparrow was taken at Raleigh, August 19, 1889, on which occasion a second specimen was seen but not obtained. A nest which had been deserted by the birds was found on July 24, 1890, and contained four eggs. C. S. Brimley recorded one on October 23, 1893. It has also been taken at Cranberry, Mitchell County, August 9, 1886, by G. B. Sennett (W. W. Cooke in *Bird-Lore*, March-April, 1911, page 86).

The Lark Sparrow is preëminently a bird of the fields or plains, building its nest in a depression in the ground, where it is usually concealed by the surrounding tufts of grass. It is constructed of grasses and weed stems. Four eggs are laid, more like those of an oriole than a typical sparrow. They have a pure white ground-color, speckled and marked with zigzag, straight, and wavy lines of very dark brown and black, chiefly near the larger end. Size .82 x .64. They are said to be laid from May to July.

Genus Zonotrichia (Swains.)

Contains several species of sparrows, with the head broadly striped above, and the wings and tail about equal in length.

KEY TO SPECIES

1. Throat white, breast ash. Superciliary line yellow in front. *White-throated Sparrow.*
1. Throat and breast same color, whitish. No yellow. *White-crowned Sparrow.*

FIG. 192. WHITE-CROWNED SPARROW.

234. Zonotrichia leucophrys leucophrys (*Forst.*). WHITE-CROWNED SPARROW.

Description: Ads.—No yellow before the eye or on the bend of the wing; center of crown white, bordered on either side by black stripes; no white before the eye; a white line from over the eye passes backward along the side of the head; nape gray; back dark grayish brown, margined with gray; rump dark brownish ash; greater and middle wing-coverts tipped with white; tail fuscous; underparts grayish, white on the belly, flanks and under tail-coverts cream-buff. *Im.*—Similar, but much browner, sides of the crown rufous-brown, center of the crown pale grayish brown; nape brownish ash; back margined with the same color. L., 6.88; W., 3.03; T., 2.88; B., .43. (Chap., *Birds of E. N. A.*)

Range.—Whole United States, except southeastern portion, in winter; breeding mainly north of the United States.

Range in North Carolina.—So far, known only as an accidental visitor in Wake and Buncombe counties.

WHITE-THROATED SPARROW. Zonotrichia albicollis (Gmel.) Upper.
FOX SPARROW. Passerella iliaca iliaca (Merrem) Lower.

Atkinson records it from Raleigh on the strength of a specimen in the collection of J. L. Busbee, and Cairns took a young male in Buncombe County, October 16, 1889. S. C. Bruner took a third specimen at Raleigh, April 14, 1912, and on October 18, 1913, he found the species not uncommon at Stuart, Va., only six miles north of the North Carolina line.

235. Zonotrichia albicollis (*Gmel.*). WHITE-THROATED SPARROW.

Description.—Superciliary stripe yellow in front; edge of wing yellow; breast ashy, throat white or whitish; head striped black-and-white in full plumaged adults; immature specimens with head striped brown-and-whitish, the latter being the condition of most of the birds observed by us. Extreme measurements of 26 Raleigh specimens: L., 6.25-7.10; W., 2.85-3.15; T., 2.90-3.15.
Range.—Eastern North America, breeding from northern United States northward.
Range in North Carolina.—Whole State in winter.

This is an abundant winter visitor throughout the State, arriving from the north about the middle of October, and leaving about May 15. It is common almost anywhere in thickets or low scattering bushes, in town or country. In fall it feeds largely on berries, such as dogwood in the woods and frost grapes in the low-grounds. Weed seeds also constitute a considerable portion of its diet. Although not essentially an insect eater, it nevertheless destroys many.

It is in song when it arrives in North Carolina, but is silent through the colder weather, commencing again on warm days in February and singing fairly constantly through March, April, and May. The song is plaintive and quite pleasant. In the White Mountains it is often called "Peabody Bird," and in Canada "Sweet-Canada Bird."

Genus Spizella (Bonap.)

A genus of small sparrows, with the tail slightly forked or notched, three species of which have been attributed to the State.*

KEY TO SPECIES

1. Wings with two conspicuous white bands; a dusky spot on breast; length usually more than 6 inches. *Tree Sparrow.*
1. Wings without two conspicuous white bands; no dusky spot on breast; length usually less than 6 inches. See 2.
2. Wings longer than tail; a blackish stripe through eye. *Chipping Sparrow.*
2. Wings and tail about same length; no blackish stripe through eye. *Field Sparrow.*

236. Spizella monticola monticola (*Gmel.*). TREE SPARROW.

Description: Ads.—No black on the forehead; an indistinct black spot on the center of the breast; top of head rufous-brown, sometimes edged with ashy; a grayish line over the eye and a rufous brown line behind it; back streaked with rufous-brown, black, and pale ochraceous-buff; rump pale grayish brown; greater and middle wing-coverts tipped with white; outer web of the outer tail-feather whitish; breast grayish white; middle of the belly white; sides tinged with pale grayish brown; upper mandible black; lower, yellow at the base, the tip black. L., 6.36; W., 2.99; T., 2.82; B., .41. (Chap., *Birds of E. N. A.*)
Range.—Eastern United States from Virginia northward in winter; breeds in northern Canada.
Range in North Carolina.—So far, attributed only to Chapel Hill and Andrews.

The Tree Sparrow has been seldom recorded from North Carolina, and none are known to have been actually taken. Mrs. Wilson reports it in winter at Andrews

*The specimen identified by Atkinson at Chapel Hill as a Clay-colored Sparrow *(Spizella pallida)* is still in existence, but is actually a Swamp Sparrow, *(Melospiza georgiana)*.

in Cherokee County. Collett reports finding it at the same place on March 9, 1902. Atkinson, in a list of the birds of Chapel Hill published in the *Raleigh News and Observer* about 1887, includes it as a probable winter visitor. (Pearson, *Jour. Eli. Mitch. Sci. Soc.*, Vol. XVI, part 1.) Bruner found this species common at Stuart, Va., only six miles north of the Stokes County, N. C., line on Oct. 18, 1913.

237. Spizella passerina passerina (*Bechst.*). CHIPPING SPARROW.

Description: Ads.—Forehead black, a short grayish line in its middle; top of head rufous; the nape generally with a few black streaks; a grayish line over the eye and a black line behind it; back of the neck grayish, separating the rufous crown from the back; back streaked with black, a little rufous, and more pale buffy ochraceous; rump slaty gray; wing-bars not conspicuous; underparts grayish white, whiter on the throat and belly; bill entirely black. *Ads. in winter and Im.*—Similar, but no rufous crown-cap or black on the forehead; top of the head streaked like the back; bill brownish. Nestlings have the breast streaked with black. L., 5.37; W., 2.74; T., 2.29; B., .36.

Remarks.—In adults the rufous crown, black forehead, gray rump, and black bill are characteristic; in winter the gray rump is a good distinguishing mark. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, wintering mainly south of this State.

Range in North Carolina.—Summer visitor in the central and western sections, resident in the east.

FIG. 193. CHIPPING SPARROW.

At Raleigh this species is one of our most abundant birds, arriving in March and not leaving until October or November. C. S. Brimley took one at Raleigh on December 29. In the mountains it arrives about the same time or a little later.

It is partial to pine woods, as well as the neighborhood of dwellings. The nest is built on the horizontal limb of a pine, oak, or other tree, seldom less than six or seven feet, and often twenty or thirty feet, from the ground; the birds also build in woodbines, climbing roses, and other convenient places in gardens or on lawns. The nest is made of grass and fine weed stems, and is usually lined with horsehair. The eggs are generally four, of a bluish green ground-color, spotted near the larger end with dark brown or black; and they are laid in May, June, or early July. To many persons this bird is known as "Tree Sparrow" from the situation of its nest.

On account of its numbers, and its seeking the neighborhood of human habitations, the Chipping Sparrow is economically of importance, as it is one of the few birds which will seek its insect-food in our gardens. Pearson once watched a Chipping Sparrow capture thirty-six insects in five minutes. The bird also eats many seeds of grasses and weeds. Its singing continues from the time it arrives till about the middle of summer, after which time it is heard no more.

238. Spizella pusilla pusilla (*Wils.*). FIELD SPARROW.

Description.—Paler and duller than the Chipping Sparrow, with longer tail and more buffy underparts. No dark streak through eye. Bill pale. Extreme measurements of 40 Raleigh specimens: L., 5.25-5.75; W., 2.25-2.70; T., 2.40-2.70. Of these 40 specimens, 10 have the wing longer than tail, 14 the tail longer than wing, and in one the two measurements are the same.

Range.—Eastern United States.

Range in North Carolina.—Resident the whole year throughout the State.

FIG. 194. FIELD SPARROW.

The Field Sparrow is another of our most common birds. It is found principally in grass fields and general open country. Like the preceding bird, it also frequents the neighborhood of houses, where it feeds on the insects in our gardens, and like practically all our native sparrows is a bird eminently deserving of our protection. In winter its food seems to consist mainly of grass seeds.

The Field Sparrow builds its nest in a low bush or a bunch of grass or weeds, sometimes directly on the ground, but more usually from a few inches to a foot or two above. It is made of grass and weed stems, lined with fine grass, rootlets, or horsehair. The eggs are four, laid in May, June, or early July, and are white in color, thickly spotted with rusty brown. Locally this bird is often called "Ground Sparrow" or "Bush Sparrow" from the location of its nest. The song-period is about the same as that of the Chipping Sparrow.

Genus Junco (Wagler)

KEY TO SPECIES

1. Head darker than back. *Slate-colored Junco.*
1. Head uniform in color with back. *Carolina Junco.*

239. Junco hyemalis hyemalis (*Linn.*). SLATE-COLORED JUNCO.

Description.—Plumage slate-gray, the head perceptibly darker; the female is strongly tinged with brownish; the underparts from the breast downward are white centrally. Outer tail-feathers white and very noticeable in flight. Extreme measurements of 22 Raleigh specimens: L., 5.75-6.50; W., 2.90-3.25; T., 2.50-2.90.

Range.—North America, breeding mainly north of the United States; in winter, whole United States.

Range in North Carolina.—Whole State in winter.

The Slate-colored Junco, better known as the Snowbird or Black Snowbird, is an abundant winter resident throughout the State, arriving from the north in late October or early November, and leaving us again about the middle of April or a little later.

It is found in open woods, along roadsides, or in fields where a few bushes afford ready retreat when alarmed. Its food consists mainly of weed and grass seeds. It is easily distinguished from other sparrows by the dark head, neck, and breast, and the white outer tail-feathers.

240. Junco hyemalis carolinensis (*Brewst.*). CAROLINA JUNCO.

Description.—Similar to preceding, but the head is the same color as back, and in the few specimens in our possession the dark color of the breast and sides encroaches more on the white of the belly.

Range.—Southern Alleghanies, wintering in the mountain valleys.

Range in North Carolina.—Whole mountain region in summer, everywhere above 3,700 feet elevation. Winters in the mountain valleys.

FIG. 195. SLATE-COLORED JUNCO.

The Carolina Snowbird is known as a summer resident at Highlands, Macon County; Blowing Rock, Watauga County; the Black Mountains, Buncombe County; Wayah Bald and Tuskwitty Range, Macon County; Big and Little Snowbird Mountains in Cherokee and Graham counties; the mountains along the State line in the two counties just named; the high mountains in and around Haywood County, and at Roan Mountain and Cranberry in Mitchell County. At Blowing Rock and Highlands it is a common and characteristic bird in the streets and gardens.

The nests are often placed in natural depressions in the banks of roads, and are constructed of rootlets, sometimes with the addition of moss, and are lined with hair, sometimes mixed with fine grass. The eggs are usually four, laid any time from May to July. They are whitish in ground-color, and more or less speckled with reddish brown. Size .82 x .60.

We have little information as to the time when the Snowbirds leave the higher levels for the low country. Kopman was in the mountains in 1898 as late as September 28, and saw none lower than Cranberry, 3,200 feet elevation. At Andrews, Cherokee County, where those from the neighboring mountains might be expected to winter, Collett's dates of arrival and departure show no material difference from Raleigh records of the Slate-colored Junco.

Genus Peucæa (Aud.)

241. Peucæa æstivalis bachmani (*Aud.*). Bachman's Sparrow.

Description.—Upperparts largely chestnut, chest buffy; underparts unstreaked; yellow on edge of wing, but none on head. Extreme measurements of 6 Raleigh specimens: L., 5.75–6.15; W., 2.25–2.50; T., 2.42–2.50.

Range.—South Atlantic and Gulf States and lower Mississippi Valley.

Range in North Carolina.—Whole State, east of the mountains.

Fig. 196. Bachman's Sparrow.

Bachman's Sparrow, a distinctly southern species, is found in summer irregularly throughout practically all that portion of the State lying east of the mountains, and to some extent at least in the mountain valleys.

At Raleigh it is quite rare, as also at Chapel Hill, but at Greensboro and Guilford College it is locally common. It has been found breeding in Buncombe County by Cairns, and has been taken or observed in New Hanover, Craven, and Macon counties, in the last of which Brewster found it near Franklin in 1885. Bruner and Feild observed it July 12, 1911, at Coot's Gap, McDowell County, 3,500 feet elevation. In late June, 1909, C. S. Brimley found it singing quite commonly in the sparse pine woods near Southern Pines, and Pearson found it very common in pine woods in August of the same year in Brunswick County, it being apparently the most common species.

While not unlikely a permanent resident in the southeastern section, it is only a summer visitor in the other portions of the State, arriving from the south in late March or April. The latest records in the autumn are September 20 at Raleigh, and November 1 at Weaverville.

This is a shy, secretive bird with a loud, ringing song, and is usually found in old, partly grown-up fields or in pastures. The nest is built of grass, on the ground, and is domed over, the entrance being on one side. The eggs are pure white, unmarked.

Genus Melospiza (Baird)

A genus of small sparrows with rounded tails and short wings.

KEY TO SPECIES

1. Breast not streaked. *Swamp Sparrow.*
1. Breast streaked. See 2.
2. Ground color of underparts white. *Song Sparrow.*
2. Broad band across chest, buff. *Lincoln's Sparrow.*

242. Melospiza melodia melodia (*Wils.*). SONG SPARROW.

Description: Ads.—Crown rufous-brown, with a grayish line through its center; a grayish line over the eye; a rufous-brown line from behind the eye to the nape; feathers of the back streaked with black and margined with rufous-brown and grayish; greater wing-coverts with black spots at their tips; no white wing-bars or yellow on the wing; tail rufous grayish brown, the middle feathers darker along their shafts; outer feathers shortest; sides of the throat with black or blackish streaks; breast with wedge-shaped streaks of black and rufous-brown which tend to form one larger blotch on the center; sides washed with brownish and streaked with black and rufous-brown; middle of the belly white. L., 6.30; W., 2.52; T., 2.62; B., .49. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States, breeding mainly north of North Carolina.

Range in North Carolina.—Whole State in winter; in summer breeding throughout the mountains and to some extent on the coast.

FIG. 197. SONG SPARROW.

The Song Sparrow is apparently only a winter visitor in central and most of the eastern portions of North Carolina, arriving from the north about the middle of October and leaving early in April.

Although Cairns never detected it breeding during his observations in Buncombe County, and Brewster failed to find it in Macon, Jackson, Haywood, and Buncombe counties in 1885, yet at the present time it seems to breed in many parts of the mountain region. The localities from which we have summer records are Highlands and Aquone in Macon County, Blantyre in Transylvania County, and Hendersonville in Henderson County, at all of which places it has been observed

in summer by Sherman or C. S. Brimley. At Blowing Rock it was found breeding by S. C. Bruner in 1907; at Cranberry, observed by P. Laurent in the summer of 1892; Asheville, seen carrying food (Pearson), July 26, 1902; Montreat, building a nest, June 27, 1910 (Pearson); and at Swannanoa, where Collett reports it as common in the summer of 1908 along the valley of the Swannanoa. Besides these records, Sherman found the birds common in late June, 1909, at Patterson, Caldwell County; Linville, Mitchell County; and Blowing Rock, Valle Crucis, and Boone in Watauga County, while still later observations show it common in Haywood, Madison, Cherokee, Avery, McDowell, and Buncombe counties, ranging from 1,600 feet upwards. These records seem to show that it is now pretty well distributed through the mountains in summer, although more common in their northern half.

When these records are considered in view of the fact that earlier ornithologists failed to find Song Sparrows in the mountains in summer, they seem to indicate that the bird is rapidly extending its breeding range southward in the Alleghany Mountains.

Our coastal breeding records are fewer, but present an even more interesting phase of distribution. On Pea Island the birds have been discovered breeding by Bishop; at Ocracoke, found very common and singing by Pearson in July, 1906; at Fort Macon, near Beaufort, where Coues recorded them as resident in 1870; and from Ocracoke to Cape Hatteras found not uncommonly by Bruner and Feild in late July, 1913.

It seems curious that a bird should breed in what are looked upon as the hottest and coolest parts of the State and not in the intervening country; yet this may possibly be explained by the fact that the humidity of portions of our coastal region is so great as to reduce the mean temperature. It may be remarked in passing that the same peculiar distribution occurs in the case of a few other birds and of some mammals.

The nest of the Song Sparrow is made of grasses, weed stems, and leaves, lined with finer material of the same kind or with hair. It is built on the ground or in a low bush. The eggs are greenish white, spotted with dark reddish brown. Average size .80 x .58.

In winter the Song Sparrow chiefly inhabits dense thickets.

243. **Melospiza lincolni lincolni** (*Aud.*). Lincoln's Sparrow.

Description: Ads.—Upperparts streaked with black, brownish gray and grayish brown; tail-feathers narrow and rather pointed, the outer ones shortest; underparts white, rather finely streaked with black, a broad cream-buff band across the breast, a cream-buff stripe on either side of the throat; sides tinged with cream-buff. L., 5.75; W., 2.50; T., 2.40; B., .41.

Remarks.—The cream-buff band on the breast is distinctive of this species. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding far northward.

Range in North Carolina.—So far, only known as a straggler in the mountains.

We know of only one Lincoln's Sparrow having been recorded in North Carolina. This was a male, which was taken by Cairns on the French Broad River in Buncombe County, May 6, 1893. (Fig. 198, page 250).

FIG. 198. LINCOLN'S SPARROW.

244. **Melospiza georgiana** (*Lath.*). SWAMP SPARROW.

Description: Ads. in summer.—Crown chestnut-rufous; forehead black; a grayish line over the eye; a blackish line behind the eye; nape slaty gray with a few black streaks; feathers of the back broadly streaked with black and margined with rufous and cream-buff or ashy buff; wing-coverts rufous, the greater ones with black spots at their tips; rump rufous grayish brown, sometimes streaked with black; tail rufous grayish brown, the middle feathers darker along their shafts; throat and middle of the belly white, breast grayish, sides washed with pale grayish brown. *Ads. in winter and Im.*—Similar, but the top of the head streaked with black, rufous-brown, and grayish; nape less gray; breast washed with brownish. L., 5.89; W., 2.34; T., 2.32; B., .46.

Remarks.—The underparts resemble those of some immature white-throated sparrows, but the wing-bars and the yellow bend of the wing will always distinguish the latter. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding mainly north of the United States.

Range in North Carolina.—Central and eastern portions in winter, mountain region during the migrations.

FIG. 199. SWAMP SPARROW.

This is a common winter visitor in that part of our State lying east of the mountains, arriving from the north about the middle of October; and it has been found at Raleigh as late as May 19, nearly a month later than the Song Sparrow stays.

In the mountains it is recorded only from Weaverville, Buncombe County, as a spring transient in late March and April, and a fall transient in October and November.

The favorite haunts of the Swamp Sparrow are patches of marsh interspersed with low bushes, where it may be found hopping about on the marsh and always ready to dart for cover upon the approach of danger.

The Clay-colored Sparrow, *Spizella pallida* (Swains.), recorded by Atkinson as being taken at Chapel Hill, March 8, 1886 (*Jour. Eli. Mitch. Sci. Soc.*, 1887, Part 2, p. 73), was later shown by Pearson to be a Swamp Sparrow. (*Auk*, 1898, p. 275.)

Genus Passerella (Swains.)

245. Passerella iliaca iliaca (*Merrem*). FOX SPARROW.

Description: Ads.—Upperparts rufous-brown, the feathers margined by cinnamon-brown and without black; upper tail-coverts and tail bright rufous; wings margined with rufous; underparts heavily streaked and spotted with rufous-brown and blackish; middle of the belly white; lower mandible yellowish. L., 7.26; W., 3.39; T., 2.85; B., .50. (Chap., *Birds of E. N. A.*)
Range.—Eastern United States, breeding wholly north of the United States.
Range in North Carolina.—Whole State in winter.

The Fox Sparrow, the largest and one of the handsomest of our sparrows, is a fairly common winter visitor throughout the State, arriving about November 1, and leaving near the middle of March. While here it is found mainly in lowland thickets and dense woods, where it is usually associated with others of its kind. It is a fine vocalist and seems to show a preference for singing on damp or cloudy days. In some seasons it appears to be much more abundant than in others.

Genus Pipilo (Vieill.)

246. Pipilo erythrophthalmus erythrophthalmus (*Linn.*). TOWHEE.

Description: Ad. ♂.—Upperparts black, sometimes margined with rufous; throat and breast black, belly white, sides rufous; outer web of primaries with white; tail black, the three outer feathers tipped with white; outer web of the outer feather entirely white; *iris red. Ad.* ♀.—Upperparts, wings, throat, and breast bright grayish brown; tail fuscous-brown the three outer feathers tipped with white; sides rufous, middle of the belly white. *Nestlings* have the back and underparts streaked with black. L., 8.35; W., 3.34; T., 3.68; B., .55. (Chap., *Birds of E. N. A.*)
Range.—Eastern United States.
Range in North Carolina.—Whole State in winter and during the migrations, breeding near the coast and in the whole mountain region.

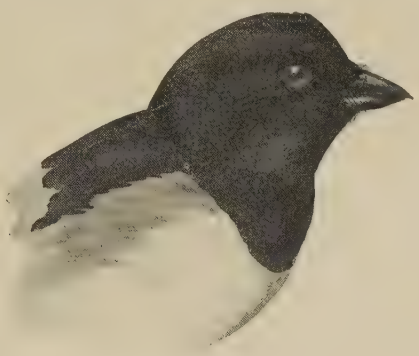


FIG. 200. TOWHEE.

The Towhee or Chewink, most commonly known in this State as "Joree," "Joreeper," or "Joerigger," is found throughout the mountain region, where it breeds abundantly, and also winters in the valleys. It appears to be a common winter visitor in the rest of the State, arriving about the first of October, and leaving in early May. While some are found all winter, it is nevertheless a more abundant

species during the migrations. This seems to be the case as far west as Greensboro; still farther west, in Stokes and Rockingham counties, it must be a resident, as the species was observed commonly in this territory by Sherman in February and also in July. Near the coast again it is resident, and we have summer records from Craven, Pitt, Lenoir, Bladen, and Carteret counties. Whether these eastern breeders show any approach to the resident white-eyed Towhee of Florida, we have not had enough specimens to decide; but a male taken at Lake Ellis in Craven County by C. S. Brimley on May 28, 1907, had the iris yellowish brown instead of red; otherwise it was indistinguishable from Raleigh specimens. Pearson found a nest with four newly hatched young in Brunswick County, June 14, 1898.

The Towhee builds its nest on the ground or in a low bush, constructing it of grapevine bark, twigs, weed stems, leaves and grass, lined with fine grass and rootlets. The eggs are three to five in number, of a whitish ground-color, thickly speckled with light reddish brown. Size .95 x .72. As to the date at which it nests, C. S. Brimley found a nest with five eggs on Satula Mountain, near Highlands, on May 9, 1908, at an elevation of 4,000 feet; and Cairns states that in Buncombe County the Towhees nest from the middle of April until June.

The Towhee derives its various names from its different call-notes, or, rather, from different interpretations of these notes. It is essentially a thicket-loving bird, and is a most energetic scratcher, a small band of them making almost as much noise among the dead leaves as a hen with chickens. In the mountains it is accused of pulling young corn, but from the other parts of the State we hear no complaint on the subject.

247. Pipilo erythrophthalmus alleni (*Coues*). WHITE-EYED TOWHEE.

Description.—Similar to common Towhee, but white on wings and tail more restricted (on tail confined to two outer tail-feathers only, or else represented on third by small spots only; while in the Towhee proper the white is present on three outer tail-feathers, and often as small spots on the fourth). Iris white in adult male.
Range.—Florida to North Carolina, along the coast only.
Range in North Carolina.—Probably coastal region from Beaufort south; at present only known from Beaufort.

This southern coastal form of the Towhee was taken by Bruner at Beaufort, July 18, 1912 (adult male with white iris), and July 22, 1912 (immature male).

Genus Cardinalis (Bonap.)

248. Cardinalis cardinalis cardinalis (*Linn.*). CARDINAL.

Description: Ad. ♂.—Throat and region about the base of the bill black; rest of the plumage bright rosy red, the upperparts tipped with grayish; a conspicuous crest; bill red. *Ad.* ♀.—Throat and region about the base of bill grayish black; crest, wings, and tail dull red; upperparts olive brownish ash; underparts buffy ochraceous, lighter on the belly, and sometimes tinged with red on the breast. L., 8.25; W., 3.75; T., 4.00; B., .64. (Chap., *Birds of E. N. A.*)
Range.—Eastern United States.
Range in North Carolina.—Resident throughout the whole State.

The Cardinal, commonly called in this State "Redbird" or "Winter Redbird," is a common resident everywhere. The nest is made of weed stems, leaves, and grass. Usually it is lined with grass, and is built in a low bush, small tree, or

bunch of briars, generally at a height of from two to four feet, but occasionally higher, and we have one record of a nest situated at a height of twelve feet. The eggs are commonly three in number, but there are two sets of four in the State Museum, collected by Dr. Smithwick in Bertie County. They are of a white ground, marked with spots of reddish brown, gray and lavender, usually pretty well scattered over the whole surface, but sometimes clustered about the larger end. Size 1.00 x .75. They are laid from late April to early July.

Fig. 201. Cardinal.

The Cardinal, like the Towhee, is preëminently a thicket-haunting bird, but does not spend so much of its time on the ground, apparently preferring to eat berries in the top of a tree rather than gather food on the earth at its base. Its song is a series of loud, clear whistles.

Genus Zamelodia (Coues)

249. Zamelodia ludoviciana (*Linn.*). Rose-breasted Grosbeak.

Description.—Male with head, neck and upperparts mostly black, with some white on wings, tail, and rump; breast and under wing-coverts bright rose-red. Female olive-brown, much streaked, with the under wing-coverts saffron-yellow; head with whitish stripes. Extreme measurements of four Rose-breasted Grosbeaks from North Carolina: L., 7.85–8.25; W., 3.95–4.45; T., 2.85–3.15.

Range.—Eastern North America, breeding from northern United States northward.

Range in North Carolina.—A resident in the mountains west of the Blue Ridge, a rare migrant in the rest of the State.

The Rose-breasted Grosbeak is a common bird during the summer months in at least portions of the mountain region, arriving from the south late in April, and has been noted in Buncombe County as late as October 23. It breeds mainly at an elevation of 3,000 feet and upward. The nests are flat, shallow structures, composed of small twigs, vegetable fibers and grass, and are built in a bush or tree. Of four nests found by Cairns in Buncombe County, one was in a small bush three feet up, another twenty feet high in a haw tree, and the remaining two respectively

seven and nine feet high in unnamed saplings. According to Cairns, the eggs are laid in May. They are greenish blue in ground-color, more or less spotted over the entire surface with blotches of reddish brown. Size about the same as those of the Cardinal.

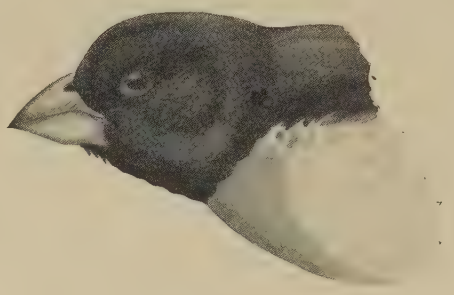


FIG. 202. ROSE-BREASTED GROSBEAK.

Outside of the mountains this bird is only recorded from Chapel Hill and Raleigh, where it has been observed in the spring between April 28 and May 8, and at Guilford College, where Pearson saw five on May 9, 1897.

Like the Cardinal, it is a pleasing singer; and it is one of the few birds that care for potato-bugs as an article of diet.

Genus Guiraca (Swains.)

250. Guiraca cærulea cærulea (*Linn.*). BLUE GROSBEAK.

Description.—Male, blue with chestnut wing-bars; female, yellowish brown with whitish wing-bars. Immature males are only partly blue, the tint in that case being restricted to the head and forepart of the body. Females are occasionally somewhat blue. Extreme measurements of 75 Raleigh specimens: L., 6.25–7.25; W., 3.00–3.65; T., 2.38–2.90.

Range.—Southeastern United States in summer; wintering south of our border.

Range in North Carolina.—A summer resident in the central and eastern districts.

FIG. 203. BLUE GROSBEAK.

The Blue Grosbeak is a summer visitor in that portion of the State lying east of the mountain ranges, arriving from the south late in April or early in May, and leaving again late in September.

This bird, which is sometimes called "Big Indigo," is a frequenter of comparatively open country, nesting usually in small trees, or sometimes on the lower limbs of larger ones. The nest is inclined to be bulky, and is constructed of weed stems or grass, and is often lined with horsehair. Sometimes lint, cotton, rags, and pieces of paper are used in its construction. Usually it is built in a fork of a small tree or bush at a height varying from three to eight feet. The eggs are four in number, and are laid in this latitude from late May to mid-July. They are white and unmarked. Size about .85 x .65.

Like other brightly colored birds of this family, the Blue Grosbeak is a good singer. It is rather partial to corn, which its powerful bill enables it to crack with ease.

Although not common in western North Carolina, Cairns found it at Weaverville on June 10, 1888. Other records from near the mountains are Taylorsville, Alexander County, two seen in June, 1909, by Bruner; and Morganton, found breeding by Wayne the same year.

Genus Passerina (Vieill.)

Contains a number of small, brightly colored finches, the males of which have more or less blue in the plumage. Both of the two eastern species occur in the State.

KEY TO SPECIES

1. Male all blue; female clear brown. *Indigo Bunting.*
1. Male blue with red and green; female green and yellowish. *Painted Bunting.*

251. Passerina cyanea (*Linn.*). Indigo Bunting.

Description.—Male in summer wholly deep blue; lores blackish, wings and tail black with blue margins; female clear brown, whitish, beneath. Extreme measurements of 59 specimens from Raleigh: L., 5.12–5.90; W., 2.50–2.90; T., 1.90–2.25.

Range.—Eastern North America in summer; wintering south of the United States.

Range in North Carolina.—Whole State in summer.

Fig. 204. Indigo Bunting.

The Indigo is an abundant summer visitor throughout our State, the first arrivals from the south appearing late in April. It departs the last week in October. Like the preceding species, it is not a woodland bird, though partial to

places where low bushes are abundant. The nest is much like that of the preceding, but smaller, and is usually not so high from the ground, being not infrequently found in blackberry briars. The eggs, which are generally four, are laid in June and July and are pure white. Size .73 x .53.

The Indigo Bunting is a fair singer, but not equal to any one of the three preceding species.

252. Passerina ciris (*Linn.*). PAINTED BUNTING; NONPAREIL.

Description.—Male with head and neck blue, underparts vermilion; back golden green; rump and tail purplish brown. Female olive-green above, pale, yellowish-green below. L., 5.40; W., 2.70; T., 2.15.

Range.—South Atlantic and Gulf States, wintering in Mexico and Central America.

Range in North Carolina.—Coastal region, from Beaufort southward.

The Painted Bunting is a summer visitor along the southern half of our coast, arriving probably in April, like its more abundant cousin, the Indigo. In the neighborhood of Beaufort it has been recorded as early as June by Pearson, and in late July and early August by Bruner. Farther south, in Brunswick and New Hanover counties, Pearson has found it common in May, June, and July. He watched a male carrying building material to a nearly completed nest at Lockwood's Folly in Brunswick County on June 12, 1898. Some ornithologists have stated that the Nonpareil usually sings from the interior of a bush or tree, but Pearson has often observed them occupying elevated terminal twigs when thus engaged.

The nest does not differ materially from that of the Indigo, but the eggs, instead of being unmarked as in that species, are spotted with reddish brown.

Another genus of this family, one, a representative of which may occur in our State, is *Spiza*, represented in the United States by the Dickcissel or Black-throated Bunting, *Spiza americana* (Gmel.). In this bird the male has a black patch on the throat, and a yellow breast, while the female lacks the black patch, and has the yellow much duller; in size it is somewhat larger than an English Sparrow, which it resembles in the general appearance of the upper surface; markings above somewhat similar.

It occurs mainly west of the Alleghany Mountains, but as C. A. Reed identified one at Ocean View, near Norfolk, Virginia, in the summer of 1907, we may expect to learn of its occurrence in North Carolina at any time.

46. FAMILY TANGARIDÆ. TANAGERS

This is a large family of tropical American birds, a few species only occurring in temperate regions. The species are said to grade into the wood-warblers on the one hand, and into the finches on the other, some forms having stout bills and others being equipped with slender ones. Only a single genus occurs with us.

Genus Piranga (Vieill.)

KEY TO SPECIES

1. Male scarlet, with black wings and tail; female olive-green, the wings and tail darker, underparts light greenish yellow. *Scarlet Tanager.*
1. Male bright rose red, wings and tail the same color; female brownish olive, dull yellowish below. *Summer Tanager.*

PAINTED BUNTING. Passerina ciris (Linn.) Male and Female.

253. Piranga erythromelas (*Vieill.*). SCARLET TANAGER.

Description: Ad. male in summer.—Bright scarlet, wings and tail black, under wing-coverts white. *Ad. male in winter.*—Similar to the female, but wings and tail black. *Im. male in winter.*—Similar to female, but wing-coverts black. *Im. male in summer.*—Similar to ad. male in summer, but primaries and secondaries as in winter. The adult summer plumage is acquired at the second spring (prenuptial) molt. *Ad. female.*—Upperparts light olive-green; wings and tail fuscous, lightly margined with olive-green; underparts greenish yellow. L., 7.25; W., 3.75; T., 2.09; B. from N., .46. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States, wintering in West Indies, Mexico, and south.

Range in North Carolina.—Migrant in the central part of the State, breeds in the mountains.

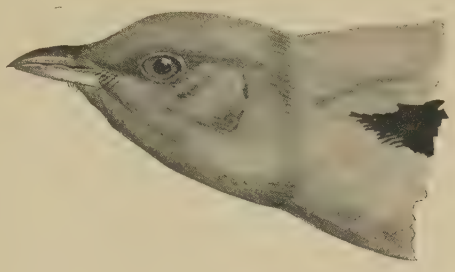


FIG. 205. SCARLET TANAGER.

The Scarlet Tanager, called in the Sapphire country "Toxaway Bird," is a late April and early May migrant in the centre of the State, passing south again in September and early October. In the mountains it remains for the summer. The nest is generally in low thick woods on the horizontal limb of a low tree or sapling, and is constructed of twigs and fine bark strips, lined with rootlets. The eggs are three to five in number, of a greenish-blue ground-color, speckled, spotted, and blotched with reddish-brown, often with confluent markings. Size .95 x .65. This tanager nests in May and June in Buncombe County.

It is quite a good singer, the song somewhat suggesting the Robin. The females are difficult to distinguish from those of the following species by color alone, but are usually lighter, and the bill is decidedly smaller, measuring only about half an inch along the culmen, while that of the Summer Tanager measures three-fourths of an inch.

254. Piranga rubra rubra (*Linn.*). SUMMER TANAGER.

Description: Ad. male.—Rose-red, brighter below; wings fuscous, margined with rose-red. *Im. male in winter.*—Similar to the female, but with more or less of a reddish tinge throughout the plumage. *Im. male in summer.*—Variable; sometimes a mixture of ad. male and female plumages, at others like the ad. male, but wing-quills as in female. The ad. male plumage is acquired at the first postnuptial molt and retained thereafter at all seasons. *Ad. female.*—Upperparts orange olive-green; underparts yellowish orange. L., 7.50; W., 3.75; T., 2.90; B. from N., .55. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States, from Maryland southward, in summer; wintering in West Indies, Mexico, and South America.

Range in North Carolina.—A summer visitor in the eastern and central parts, and in the valleys among the mountains.

The Summer Tanager, often called "Summer Redbird," is a common summer resident throughout most of the State, arriving from the south about the middle of April and leaving late in September.

The nest is a rather shallow, saucer-shaped structure, composed of dark weed-stems outside, and of light colored grass within, the colors of the two layers being in abrupt contrast. It is built on the horizontal limb of some medium-sized tree, often an oak or pine. The eggs are usually three in number, laid in May or June, and are light green in ground-color, spotted, speckled, and blotched with various shades of lilac, brownish-purple and dark brown; average size .95 x .65.

FIG. 206. SUMMER TANAGER.

The Summer Tanager is a better singer than its more gaudy relative in scarlet and black, and its song is even more like that of the Robin, but is more continuous.

Both the Tanagers are woodland birds, the present species being equally at home in pine forests, mixed woods, groves of shade trees near houses, or mulberry orchards. In matters of diet it seems to prefer bees and wasps. Its bill is well fitted for the task of quickly crushing stinging insects.

Although the fact is not mentioned in Chapman's descriptions, the females not infrequently have the plumage more or less flushed with red.

47. FAMILY HIRUNDINIDÆ. SWALLOWS

Swallows are found in all parts of the world, and may be known from other perching birds by their long, pointed wings, and deeply cleft mouth, the latter being a veritable dip-net with which the bird catches its insect-prey while on the wing

Six genera occur with us.

KEY TO GENERA

1. Color of upperparts brown. See 2.
1. Color of upperparts more or less bluish. See 3.
2. Outer web of outer primary with stiff recurved hooks. *Stelgidopteryx.*
2. Outer web of outer primary without hooks. *Riparia.*
3. Tail forked for more than half its length. *Hirundo.*
3. Tail not forked for more than half its length. See 4.
4. Length more than 7.00. *Progne.*
4. Length less than 7.00. See 5.
5. Throat white. *Iridoprocne.*
5. Throat chestnut. *Petrochelidon,*

Genus Progne (Boie.)

255. Progne subis subis (*Linn.*). PURPLE MARTIN.

Description.—Male lustrous blue-black, above and below; wings and tail duller. Female duller, underparts grayish, belly white. Extreme measurements of six North Carolina specimens: L., 7.50–7.90; W., 5.15–6.00; T., 2.50–3.15.

Range.—Most of North America in summer.

Range in North Carolina.—Whole State in summer.

FIG. 207. PURPLE MARTIN.

The Purple Martin, better known as "Black Martin," is locally common throughout the State, its abundance in summer being apparently dependent on the nesting facilities, in the way of martin boxes or suspended gourds, which man provides for its accommodation. There is a marked, but unexplained, irregularity in the dates of its arrival in the State. Thus it is said to reach Bertie County in the middle or latter part of March, while in most of the remainder of the State the earliest dates are about the middle of April, with an occasional March record. For instance, at Raleigh it has been recorded only once in March (March 16, 1907), in twenty-five years of observation.—(C. S. BRIMLEY.)

This species used to breed in hollow trees, but since the white man came and provided better accommodations for nesting places it has discontinued this custom,

and taken to the ways of civilization. The nests are composed of leaves, grasses, rootlets, mud, twigs, rags, or any other convenient materials. The eggs are four to six in number, laid in May or June. They are pure glossy white; size .98 x .65.

While a very useful insectivorous bird, it flocks in such numbers during the fall migrations as sometimes to become a great nuisance. At Wrightsville, near Wilmington, a few years ago, they gathered to roost in such enormous numbers in late summer as almost to empty the neighboring summer hotel. A similar circumstance was reported from Mount Airy, Surry County, in September, 1885 and 1886. Probably 200,000 have roosted of recent years in a grove in the center of the town of Greensboro, Guilford County. The last birds of this species leave the State for their winter homes in Mexico during the month of September.

Genus Petrochelidon (Cab.)

256. Petrochelidon lunifrons lunifrons (*Say.*) CLIFF SWALLOW.

Description.—Lustrous steel blue; forehead, sides of head, throat and rump different shades of chestnut; a blue spot on breast; belly whitish. L., 6.01; W., 4.35; T., 2.01.
Range.—North America in summer; in winter Central America.
Range in North Carolina.—So far, known only as a migrant in various portions of the State.

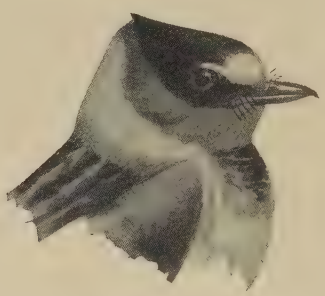


FIG. 208. CLIFF SWALLOW.

At present the Cliff or Eaves Swallow is known only as a spring transient at Raleigh, where it has been observed in six different years between April 26 and May 9; at Weaverville it was found by Cairns between April 15 and May 1, in 1892 and 1893; and at Lake Ellis in Craven County, where C. S. Brimley saw a single specimen on May 8, 1906.

The Cliff Swallow is not very different in its habits from other swallows, its chief peculiarity consisting in the fact that it builds a gourd-shaped nest of pellets of mud, fastening it against the face of overhanging cliffs or underneath the eaves of buildings. The eggs resemble those of the Barn Swallow in being spotted, while those of all our other species are pure white without markings. Size .80 x .55.

Genus Hirundo (Linn.)

257. Hirundo erythrogastra (*Bodd.*). BARN SWALLOW.

Description.—Lustrous steel blue, buffy below; forehead and throat deep chestnut; tail-feathers with white spots, under tail-coverts rufous. Extreme measurements of 21 Raleigh specimens:

L., 5.85–7.60; W., 4.50–4.95; T., 2.20–4.15. The difference in total length and in length of tail depends mainly on the degree of development of the two outer tail-feathers in different birds, only fully adult males having the scissor-like shape fully developed, while in young males and females the tail is much shorter and less forked.

Range.—Whole of North America in summer; wintering in Central and South America.

Range in North Carolina.—Whole State during migrations, only known at present to nest in Watauga County in the mountains, and in a few places along the coast.

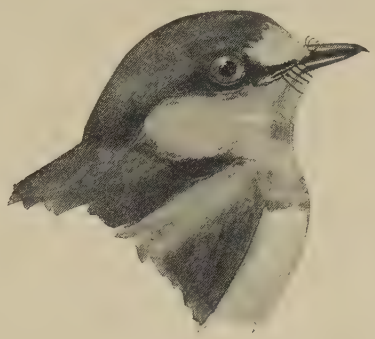


Fig. 209. Barn Swallow.

The Barn Swallow, the only North American species having a real "swallow-tail," is a rather common spring migrant in our State during the greater part of April and May. Again it is seen in August and the first half of September. It usually flies in large flocks, particularly over marshy ground or above water, and not infrequently is found in company with other species of the family.

Thus far we have three breeding records for the State. One comes from Pea Island, where Bishop and Pearson have both found it breeding. At Wrightsville two nests with young were discovered under the eaves of a summer hotel in July, 1903, by Pearson. He and H. H. Brimley observed several on the Cape Fear River, fifteen miles above Southport, in June, 1909. Away from the coast our only breeding record is furnished by Sherman, who found a pair nesting in a barn at Valle Crucis, Watauga County, in late June, 1909.

The nest is a bowl-shaped structure, composed of mud, lined with feathers. It is open above and is placed on a rafter inside a barn, or in similar situations. The eggs are white, spotted with reddish brown, chiefly near the larger end. Size .75 x .55. Four to six are laid.

Genus Iridoprocne (Coues)

258. Iridoprocne bicolor (*Vieill.*). Tree Swallow.

Description.—Lustrous blue-green above, underparts pure white. Extreme measurements of 26 Raleigh specimens: L., 5.60–6.00; W., 4.50–4.85; T., 2.20–2.50.

Range.—Whole of North America, wintering more or less in the extreme southern States, and in the West Indies and Central America.

Range in North Carolina.—A common spring migrant in the State from Chapel Hill eastward, at times a winter visitor along the coast, and sometimes seen in the fall migrations.

The Tree or White-bellied Swallow, easily distinguished from all our other swallows by the pure white underparts, is a common spring migrant in the eastern half of the State. Here it has been noted from March 12 to May 20 in spring, and in

fall from early August to mid-October. In the tidewater section it has thrice been recorded in winter, namely, below New Bern in January, 1885, by H. H. Brimley; at Fort Macon by Coues in January, February, and March, 1870, and at Lake Ellis, Craven County, November 6-13, 1910, observed to be common by H. H. Brimley. We have no summer records for it, but Pearson found the species common at Cape Hatteras on April 19, 1898; and saw several birds looking into holes of dead trees on the shores of Lake Mattamuskeet on April 16, 1898.

FIG. 210. TREE SWALLOW.

The Tree Swallows nest in holes in dead trees, usually in the neighborhood of water; in fact, these birds are seldom seen far from it. On the coast of Maine, Pearson has found them nesting commonly in boxes on poles erected by lobster men. The nest is lined with grass and similar material, with an inside layer of feathers, in which comfortable bed five to seven pure white eggs are laid. The nesting season is said to be from May to July, but in this latitude we can doubtless omit the latter month from our calculations. They are known to breed near Cape Charles, Virginia.

Genus Riparia (Forst)

259. Riparia riparia (*Linn.*). BANK SWALLOW.

Description: Ads.—Upperparts brownish gray; throat white; a brownish-gray band on the breast; outer vane of first primary without recurved hooklets; a small tuft of feathers above the hindtoe. L., 5.20; W., 3.95; T., 2.00; B. from N., .18. (Chap., *Birds of E. N. A.*)

Range.—Northern hemisphere; in America wintering in West Indies, South and Central America.

Range in North Carolina.—Rare migrant throughout the State.

The Bank Swallow has been recorded in this State as a migrant at Fort Macon (Coues, 1870); a rare transient in Buncombe County (Cairns, 1891); and as common along the Tuckaseegee River, near Dillsboro, in May, 1888 (W. A. and J. A. Jeffries). The only other records come from the two specimens taken by H. H. and C. S. Brimley at Raleigh on April 24, 1888, and on August 8, 1896.

In feeding and nesting habits this bird closely resembles the Rough-winged Swallow, which seems largely to replace it in the Southeastern States. Both birds are called "Bank Swallow" by casual observers.

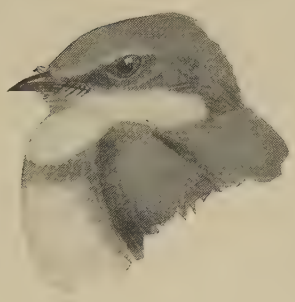


Fig. 211. Bank Swallow.

Genus Stelgidopteryx (Baird)

260. Stelgidopteryx serripennis (*Aud.*). Rough-winged Swallow.

Description: Ads.—Upperparts brownish gray; throat and breast pale, brownish gray; belly white; outer web of first primary with a series of recurved hooklets (sometimes absent in female); no tuft of feathers above the hindtoe. *Im.*—Similar, but without recurved hooklets on the first primary; throat and breast more or less washed and wing-coverts edged with rufous. L., 5.75; W., 4.35; T., 2.10; B. from N., .19. (Chap., *Birds of E. N. A.*)

Range.—United States, except extreme northern portion, wintering in Mexico and Central America.

Range in North Carolina.—A rather common summer resident throughout the State, arriving in the eastern and central sections about the end of March or first part of April, and in the mountain region near the middle of April.

Fig. 212. Rough-winged Swallow.

The Rough-winged Swallow, commonly called Bank Swallow, is not an uncommon summer visitor with us. It is an early arrival from the south (last of March), and it departs shortly after the breeding season. The latest date at which it has been observed at Raleigh is July 17.

This species nests in holes in banks, which it sometimes excavates for this purpose. If a burrow is used, it generally runs in for two or three feet, terminating in a slight depression that is lined with grass or feathers. Railway cuts or the high banks of streams furnish suitable situations. The eggs are four to six in number, white, without markings, and are laid in May or June. Pearson found an occupied

nest in a Kingfisher's burrow in Gates County in June, 1892. The Swallow's nest covered deeply the four abandoned eggs of a Kingfisher.

Like all our swallows, this species is exclusively insectivorous, and is worthy of the fullest protection. On account of its great powers of flight, which it shares with all the rest of the family, it is able to seek its prey over a wide range of country.

48. FAMILY BOMBYCILLIDÆ. WAXWINGS

This family contains but a single genus and three species, one of these being American, a second Japanese, and the third occurs in the northern portions of Europe, Asia, and America. All are crested, and the plumage is very soft and silky.

Genus Bombycilla (Vieill.)

261. Bombycilla cedrorum (*Vieill.*). CEDAR WAXWING.

Description.—Plumage soft and silky and cinnamon-drab in color. Secondaries often tipped with horny appendages resembling red sealing wax. These are frequently absent in females and young birds. Tail tipped with yellow. Extreme measurements of 35 specimens from Raleigh: L., 6.50–7.35; W., 3.55–3.85; T., 2.15–2.55.

Range.—Whole of temperate North America.

Range in North Carolina.—Whole State at all seasons, but very erratic in its annual and seasonal distribution and occurrence.

FIG. 213. CEDAR WAXWING.

"The Cedar Waxwing, also known as the 'Cedar-bird' and 'Cherry-bird,' goes in flocks, except in the breeding season, being seemingly attracted to any particular locality by the extra supply of food there. It feeds on all sorts of berries, and is sometimes a nuisance as, when a big flock of these birds settle down in a trucker's strawberry patch, there is likely to be a considerable diminution in the number of salable berries before they get up again. On the wing they fly very much as if they had been drilled, every bird seeming to move its wings in time with the rest, and a flock of Cedar-birds compared with a flock of blackbirds, for instance, looks very much like a company of regular soldiers by the side of a disorderly mob.

"The eggs, generally five in number, have a slaty ground-color, tinged with olive, and are marked with blotches of dark brown and purple. Size about .85 x .60. The only nest I ever found was forty feet high on the horizontal limb of a pine, being constructed of weed stems lined with grass. The nest contained five eggs on June 13, 1890.

"Personally I have noticed this species feeding on strawberries, mulberries, persimmons, frost-grapes, and the berries of cedar, privet, holly, and *Ilex decidua*."—C. S. BRIMLEY.

49. FAMILY LANIIDÆ. SHRIKES

Genus Lanius (Linn.)

Three forms of this genus occur with us, all being very much alike.

KEY TO SPECIES

1. Wing 4.33 or more. Lower eyelid more or less white. Black on sides of head not meeting across forehead. *Northern Shrike.*
1. Wing 4.25 or less. Lower eyelid not white. Black on sides of head meeting across forehead. See 2.
2. Wings longer than tail. *Migrant Shrike.*
2. Wings shorter than tail. *Loggerhead Shrike.*

262. Lanius borealis (*Vieill.*). NORTHERN SHRIKE.

Description: Ads.—Upperparts gray; wings and tail black; primaries white at base, secondaries tipped with white or grayish; outer, sometimes all, the tail-feathers tipped with white, the outer feather mostly white; forehead whitish; lores grayish black; ear-coverts black; underparts white, generally finely barred with black; bill hooked and hawklike. *Im.*—Similar, but entire plumage more or less heavily barred or washed with grayish brown. L., 10.32; W., 4.55; T., 4.00 B. from N., .55. (Chap., *Birds of E. N. A.*)

Range.—Northern North America, south in winter to the Potomac and Ohio.

Range in North Carolina.—So far, only known from Pea Island.

FIG. 214. NORTHERN SHRIKE.

The Northern Shrike claims a place in our fauna on the strength of an immature male killed on Pea Island, December 9, 1909, by Robertson and sent in the flesh to Bishop.

263. Lanius ludovicianus ludovicianus (*Linn.*). LOGGERHEAD SHRIKE.

Description: Ads.—Upperparts gray; wings and tail black; primaries white at base, secondaries tipped with white; outer, sometimes all, the tail-feathers tipped with white; the outer feather mostly white; lores black, connected by a narrow black line on the forehead at the base of the bill; ear-coverts black; underparts white, sometimes tinged with gray. L., 9.00; W., 3.82; T., 3.87; B. from N., .48; depth of B. at N., .35 (average of nine Florida specimens). (Chap., *Birds of E. N. A.*)

Range.—Southern States, north to North Carolina; resident.

Range in North Carolina.—Apparently the whole coastal region, more common in winter.

FIG. 215. LOGGERHEAD SHRIKE.

The summer records of Loggerhead Shrikes in the coastal region are: LaGrange, rather rare resident, breeds (Smithwick); Kelford, Bertie County, two seen on telegraph wires, July 21, 1909 (Sherman); Kingsboro, Edgecombe County, two seen at Test Farm, July 27, 1909, apparently mated (Sherman); and Laurinburg, Scotland County, one seen April 27, 1909 (Sherman). On May 12, 1900, Pearson found a pair of birds near the beach behind the sheltering dunes a few miles east of Lockwood's Folly, Brunswick County, which evidently had a nest near by. In searching for evidence to support this belief, he found an old nest which, from the character of its structure, he felt sure had been built by Shrikes probably in the previous year.

The Loggerhead Shrike builds its nest in scrubby or thorny trees or hedges, making a compact, bulky structure of weed stems, grass, rootlets, paper, wool, and feathers, the latter being the lining and concealing the eggs from view. The eggs range from four to six in number. In color they are dull whitish or greenish gray, marked and spotted with dull purple, pale brown, or olive. Size .97 x .73.

All shrikes have the habit of impaling their prey on thorns, splinters, and barbed-wire fences, when not desired for immediate consumption. Their food consists of large insects and small birds, mammals, and reptiles. C. S. Brimley recalls finding a Myrtle Warbler once hanging on a small bush, with its head impaled on a sharp thorn, and its dried body swinging in the wind. Pearson discovered a Shrike in the act of impaling a Chipping Sparrow on a splinter of a wind-fallen tree.

For a lookout post the Loggerhead prefers the top of a small tree or a telephone or telegraph wire. When taking flight it drops abruptly at first, as if the weight of its body were too great for the short wings to support.

The usual notes of the Loggerhead are harsh, one of its calls being very like the creaking and squealing of a rusty windlass. It has, however, at times a low and pleasing song. In most parts of the State where it has received a local name it is known as "French Mockingbird," or "Butcher Bird."

264. Lanius ludovicianus migrans (*Palmer.*) Migrant Shrike.

Description.—Differs from the Loggerhead only in slightly paler color and in having the wing longer than the tail, the validity of which latter distinction can be judged by the following extreme measurements of Raleigh specimens taken from September to February: L., 8.15–9.15; W., 3.65–4.00; T., 3.25–4.15. Number of specimens having wings longer than tail, 21; with tail longer than wings, 9; with wings and tail equal, 7; total, 37.

Range.—Eastern United States, occupying the northern portion in summer, and migrating more southward in winter.

Range in North Carolina.—Most of the State in winter and fall, and parts of the west in summer.

The Migrant Shrike, which is simply the more northern and migratory subspecies of the Loggerhead, occurs at Raleigh from late August till the end of March, and has also been observed in winter at Durham, Greensboro, Guilford College, Warrenton, and Chapel Hill. It has been recorded as breeding at Statesville (McLaughlin), and Morganton (Wayne), and as a migrant in Buncombe County (Cairns).

50. FAMILY VIREONIDÆ. VIREOS

This family contains a number of small insectivorous birds, with the bill hooked slightly at the tip. In this State they seem to be known almost exclusively as "Hangers" or "Swinging-birds," from the way in which they suspend their nests from the limbs of trees. Technically, this family is remarkable for the fact that different species possess either nine or ten primaries, which character in other perching-birds is of family importance, while it here becomes only of specific importance.

KEY TO GENERA

1. First primary two-fifths or more length of second. Wings relatively short and rounded, not one-fourth longer than tail; bill stout. *Vireo.*
1. First primary very short or apparently wanting, not one-fourth length of second. Wings long and pointed, one-fourth or more longer than tail. See 2.
2. Slender species. No wing-bars nor orbital ring. *Vireosylva.*
2. Stout species. Wing-bars and orbital ring present. *Lanivireo.*

Genus Vireosylva (Bonap.)

This genus includes those vireos, which have long wings without any wing-bars, slender bills, and no orbital-ring. The species are all very much alike, but so far as this State is concerned only one species occurs outside the mountain region.

KEY TO SPECIES

1. Crown ashy, edged with black. Primaries apparently nine. *Red-eyed Vireo.*
1. Crown ashy, without black. See 2.
2. Primaries apparently nine. *Philadelphia Vireo.*
2. Primaries evidently ten. *Warbling Vireo.*

265. Vireosylva olivacea (*Linn.*). RED-EYED VIREO.

Description.—Olive green above, white below. Crown ashy, edged on each side with blackish. A white superciliary line and below this a dusky streak. Iris red. Extreme measurements of 45 Raleigh specimens: L., 5.65 to 6.25; wing, 2.90 to 3.40; tail, 1.95 to 2.30.

Range.—North America, east of the Rocky Mountains, wintering in Mexico, Central and South America.

Range in North Carolina.—Whole State in summer.

FIG. 216. RED-EYED VIREO.

The Red-eyed Vireo, the best known and most abundant member of the family, is a very common summer resident in North Carolina, arriving from the south about the middle of April, although somewhat later in the higher and more northern localities in the mountains. The latest birds do not leave us in fall until the last of October. This is one of the few birds in which a distinct wave of migration has been noted quite distinct from the one which brings the breeding birds. During May, C. S. Brimley has often observed these Vireos migrating in the lowgrounds fully three weeks after the breeding birds had arrived in the upland woods.

The nest is a deep, cup-shaped structure, made of bark, grass, and other vegetable substances woven together, the lining being of finer materials. It is suspended by the rim from a slender fork at the end of a drooping limb. We have found nests thus situated in beech, sweet gum, dogwood, persimmon, oak, maple, and birch trees. The eggs are three, occasionally four, pure white in ground-color, and sparingly sprinkled with fine, dark, reddish-brown dots, chiefly near the larger end. Size .85 x .56. At Raleigh nests have been recorded from May 19 to June 17, and what few dates we have for other North Carolina localities also fall within this period.

The Red-eyed Vireo is a constant and persevering singer, and one of the few birds that sings in the middle of the day; the song-period, however, does not extend beyond the heat of early summer. Its diet is strictly insects, and it seems when hopping about among the branches to keep a lookout mainly for those forms which may be above its head, as it is continually looking upward. Like all other vireos, it will stop work to scold the moment an intruder comes near its nest.

266. Vireosylva philadelphica (*Cass.*). PHILADELPHIA VIREO.

Description: Ads.—Upperparts light olive-green; the crown sometimes grayish; a whitish line over the eye; wings and tail edged with olive-green; no wing-bars; first primary nearly as long as second; entire underparts nearly uniform, pale, greenish yellow. L., 4.75; W., 2.60; T., 1.95; B. from N., .26.

Remarks.—The pale, greenish-yellow color spread almost uniformly over the entire underparts distinguishes this bird from our other Vireos. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding chiefly north of the United States; wintering in Central America.

Range in North Carolina.—So far, only known as a rare transient in the mountains.

The Philadelphia Vireo is known in this State only as a rare migrant in Buncombe County, where it was once taken by Cairns. (See Smithwick, *Catalogue of the Birds of North Carolina*, 1897.)

267. Vireosylva gilva gilva (*Vieill.*). WARBLING VIREO.

Description: Ads.—Upperparts ashy olive-green; no wing-bars; wings and tail edged with the color of the back; first primary very short, not more than 1.00 in length; underparts white; slightly washed with yellowish. L., 5.80; W., 2.85; T., 2.14; B. from N., .30. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America; wintering in Mexico.

Range in North Carolina.—Summer visitor in at least parts of the mountain region.

The Warbling Vireo is recorded by Cairns as a rather rare summer visitor in Buncombe County, and is given by Minot Davis as having arrived there on April 21, in 1899. He also adds the statement that it is local, and breeds.

In general habits this species differs little from the Red-eyed Vireo; the nest, however, is said to average higher from the ground and the eggs are a trifle smaller. The song is somewhat similar, but is more continuous.

Genus Lanivireo (Baird)

Rather stout vireos, with comparatively long wings. We have two species, one being represented by two subspecies.

KEY TO SPECIES AND SUBSPECIES

1. Superciliary line, orbital ring and anterior underparts yellow. *Yellow-throated Vireo.*
1. Superciliary line, orbital ring, and underparts white. See 2.
2. Crown bluish ash, in contrast to olive-green of back. Wing less than 3 inches. *Blue-headed Vireo.*
2. Crown and back more or less uniform blackish-plumbeous, not contrasting. Wing more than 3 inches. *Mountain Solitary Vireo.*

268. Lanivireo flavifrons (*Vieill.*). YELLOW-THROATED VIREO.

Description.—Rich olive-green above, becoming ashy on rump; bright yellow below, except belly, which is white. Wing-bars white. Superciliary line and orbital ring yellow. Extreme measurements of 48 Raleigh specimens: L., 5.35–5.75; W., 2.90–3.15; T., 1.85–2.15.

Range.—Eastern United States, south in winter to Central America

Range in North Carolina.—Whole State in summer, breeding throughout its range.

The Yellow-throated Vireo arrives in our State from the south about the middle of April, and leaves in September. The song is loud and musical and is continued virtually during the entire period of the bird's stay. While here this bird may be found in mixed woods or in groves of shade trees around houses, and it appears to have a preference for groves of large trees.

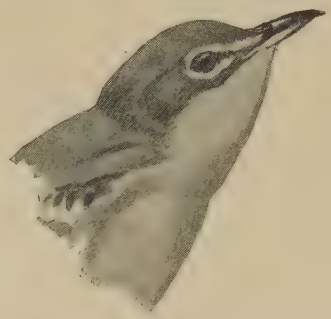


FIG. 217. YELLOW-THROATED VIREO.

Its nest is similar to that of the Red-eyed Vireo, but is usually placed at a greater height from the ground. The outside is often ornamented with gray lichens. In true vireo fashion, it is suspended from a fork at the end of a limb, and the eggs are said to have a more roseate tinge, and to be more heavily marked than those of the other members of the family. We have only one record of a nest taken in North Carolina; this was at Raleigh, May 28, 1894. It contained three eggs, and was suspended from a fork at the end of a long limb of a small oak, at a height of eight feet from the ground.

269. Lanivireo solitarius solitarius (*Wils.*). BLUE-HEADED VIREO.

Description: Ads.—Top and sides of the head bluish gray; eye-ring and lores white; back olive-green; greater and middle wing-coverts tipped with white, forming two distinct wing-bars; outer web of tertials edged with whitish; underparts white; sides washed with greenish yellow. L., 5.61; W., 2.96; T., 2.15; B. from N., .28.

Remarks.—This species may be known by its white lores and eye-ring, and bluish-gray cheeks and crown. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding chiefly north of the United States; wintering in Mexico and Central America.

Range in North Carolina.—Spring and fall migrant thorughout the State.

Except that this form occurs with us in both the spring and fall migrations, little can be said about it that does not apply to the next form, nor can the migration-records of the two forms be separated. Seventy-three specimens have been taken at Raleigh on various dates, as follows: January 3 (1891); in March and April, and on May 5, 1889; July 27, 1892; in August, September, October, and on November 3, 1889; and December 15, 1885. The winter and summer birds, and at least some of the others, might perhaps just as correctly be enumerated in the discussion of the next form.

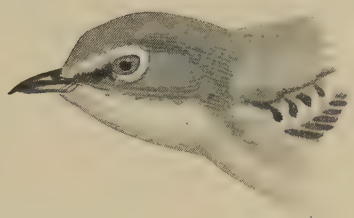


FIG. 218. BLUE-HEADED VIREO.

270. Lanivireo solitarius alticola (*Brewst.*). MOUNTAIN VIREO.

Description.—Similar to the Blue-headed Vireo, but larger, with the crown and back much darker, being in typical specimens nearly the same shade. Extreme measurements of 20 specimens from Raleigh, Weaverville, and Statesville: L., 5.50–6.00; W., 3.00–3.25; T., 2.15–2.45.

Range.—Southern Alleghanies in summer, wintering southward.

Range in North Carolina.—Mountain region in summer, also to some extent in the central portion of the State, as far east at least as Wakefield in Wake County. Occasional also in winter at Raleigh.

The Mountain Solitary Vireo is a form of this species found in the mountains of our State, from which it was first described by Brewster from an adult male taken at Highlands, Macon County, May 29, 1885 (*Auk*, Jan., 1886). It also occurs eastward through the State, apparently becoming less typical as one proceeds until reaching eastern Wake County, where it has been taken in early July within hearing of the songs of the Prothonotary Warbler. It seems rather unusual that a bird whose chosen breeding grounds are in the high mountains and Canada should nest in our hot pine woods in a wholly different life zone.

In the mountains it appears to be quite a common and universally distributed bird, having been found in Macon, Cherokee, Buncombe, Watauga, Avery, Caldwell, Haywood, Transylvania, and Mitchell counties. It arrives in the State late in March, and departs in October or early November. In the mountains it breeds chiefly in deciduous trees, Cairns having found a nest in a chestnut tree on Craggy Mountain in Buncombe County, May 27, 1887. Sherman and C. S. Brimley saw a pair building a nest in a small sourwood at Lake Toxaway, May 8, 1908, and Bruner discovered a nest in a chestnut tree at Blowing Rock a few years ago. Cairns also took a second nest, this time in an oak, on May 4, 1888. Outside of the mountains this form has been recorded at Statesville (McLaughlin), and Morganton (Wayne), while birds that are at least as near this form as the preceding, breed at Raleigh. As to its time of nesting in the central portion of the State, we took a nest containing four fresh eggs at Raleigh on April 27, 1891, and McLaughlin found one at Statesville on June 11, and another June 15, 1888. The nests are more substantially built than those of other vireos, and are composed of coarse grass stems and strips of bark lined with fine grass and ornamented outside with sheep's wool, pellets of spider's web, and sometimes with lichens. In the mountain region it seems to range mainly from 3,000 feet upward, which does not well conform with its breeding in the low pine country of the central district.

The song is loud and musical, very similar to that of the Yellow-throated Vireo, but more shrill, and is not distinguishable from that of the Blue-headed Vireo.

Genus Vireo (Vieill.)

271. Vireo griseus griseus (*Bodd.*). WHITE-EYED VIREO.

Description: Ads.—Upperparts, including upper tail-coverts, bright olive-green, more or less washed with grayish; greater and middle wing-coverts tipped with yellowish white, forming two distinct wing-bars; outer web of tertials edged with whitish; lores and eye-ring yellow; throat white or whitish; belly white; breast and sides washed with greenish yellow; iris white, hazel in the young. L., 5.27; W., 2.37; T., 1.95; B. from N., .29. (Chap., *Birds of E. N. A.*)

Range.—United States, east of Rocky Mountains; wintering in Mexico and Central America.

Range in North Carolina.—Whole State in summer, breeding throughout its range.

FIG. 219. WHITE-EYED VIREO.

The White-eyed Vireo is a common bird throughout North Carolina in the breeding season, arriving near the end of March or during the first week in April, except in the mountains, where it appears a week or two later. The latest date recorded in the fall is October 16 at Raleigh.

Unlike our other vireos, this is a bird of the thickets rather than the woods. The nest is of the regular vireo type, and is usually found suspended from the fork of an alder, swamp dogwood, or other lowland bush, at a height of three to eight feet from the ground. The outside of the nest is usually ornamented with green moss. The spots on the eggs are more or less evenly distributed over the entire surface. Size .75 x .55. At Raleigh, eggs have been taken from late April until late June.

The White-eyed Vireo is a fussy, inquisitive little bird, very much given to scolding any intruder upon its privacy. The song is a very distinctive feature of the lowgrounds, but it cannot be called particularly melodious. Many years ago the boys around Raleigh used to say that in singing it said, "Fishing-in-the-creek; put-your-cork-a-little-deeper."

51. FAMILY MNIOTILTIDÆ. WOOD WARBLERS

This is the most characteristic North American family of birds, none of the species being found outside of the Western Hemisphere. Most of them are confined to the eastern portion of the North American continent during the breeding season. While a few species pass the winter in the United States, as a whole they are highly migratory, and journey in autumn to the West Indies or South and Central America.

They are all small birds, the Yellow-breasted Chat being the only one which could be called of medium size, and the majority of them are only about five inches in length.

The name "Warbler" comes from their general resemblance to the warblers of Europe, whose places they take in this country, and not from any especial musical ability of their own. Although many of them sing pleasingly, the songs as a rule are little more than simple trills.

The males of many species are brightly colored and beautifully marked. The sexes are often quite unlike in coloration, and the variations due to age and season are also striking.

The technical points which distinguish them are the possession of nine developed primaries; a slender bill not decidedly hooked at tip; inner secondaries not lengthened; hind toe not long nor straight.

The genera are numerous, and all those found in North America are represented in North Carolina.

KEY TO GENERA

1. Bill depressed, broader than deep at base, notched and slightly hooked, with strong rictal bristles. Length 5.50 or less. See 2.
1. Bill not depressed or hooked. Rictal bristles, if present, short. See 3.
2. Tail blotched with yellow or orange red. *Setophaga.*
2. Tail blotched with white or not at all. *Wilsonia.*
3. Bill stout, much compressed; length 7 or more. *Icteria.*
3. Bill rather slender, little compressed; length less than 6.50. See 4.
4. Hind toe with claw very long, as long as tarsus in front. Color black-and-white, striped; no yellow. *Mniotilta.*
4. Hind toe with claw much shorter than naked portion of tarsus in front. See 5.
5. Middle toe with claw not shorter than tarsus. No wing-bars. See 6.
5. Middle toe with claw decidedly shorter than naked portion of tarsus in front, or else wing-bars present. See 8.
6. Tail-feathers blotched with white. *Protonotaria.*
6. Tail-feathers unblotched. See 7.
7. Bill much compressed; top of head plain brown. *Helinaia.*
7. Bill slightly compressed; top of head with two black stripes, separated by a broader one of buff. *Helmitheros.*
8. Gape without bristles; bill very acute, scarcely notched. Tail-feathers plain or blotched with white. *Vermivora.*
8. Gape with bristles. See 9.
9. Tail blotched with white or with the inner webs bright yellow. See 10.
9. Tail without white or bright yellow. See 11.
10. Hind toe evidently longer than its claw; bill acute, not notched. *Compsothlypis.*
10. Hind toe scarcely longer than its claw; bill mostly not very acute, and with a slight notch near tip. *Dendroica.*
11. Lower parts much streaked. *Seiurus.*
11. Lower parts not streaked. See 12.
12. Tail not shorter than wings, its feathers not half hidden by the coverts. *Geothlypis.*
12. Tail shorter than wing, its feathers half hidden by the coverts; at least posterior underparts bright yellow. *Oporornis.*

Genus Mniotilta (Vieill.)

272. Mniotilta varia (*Linn.*). BLACK-AND-WHITE WARBLER.

Description.—Black and white, streaked everywhere. Wing-bars and spots on inner web of two outer tail-feathers, white. Female is duller and more grayish with less black streaking below. Extreme measurements of 95 Raleigh specimens: L., 4.85–5.46; W., 2.46–2.90; T., 1.75–2.15.

Range.—Eastern North America in summer, wintering in the Gulf States and southward.

Range in North Carolina.—Whole State in summer, breeding everywhere.

The Black-and-White Warbler, sometimes called the Black-and-White Creeper on account of its movements, is a common summer visitor in all portions of our State, arriving about the end of March and leaving in October. Its favorite haunts are mixed woods, particularly where there are sloping hillsides, in which

situations it builds its nest, often at the foot of some small tree, or by the side of a log. It is constructed of leaves and grasses, and given a lining of finer materials. The eggs are four or five in number and are deposited in April or May. They are white, speckled with hazel or cinnamon rufous, and often also with lilac or lavender gray. Size .70 x .52.

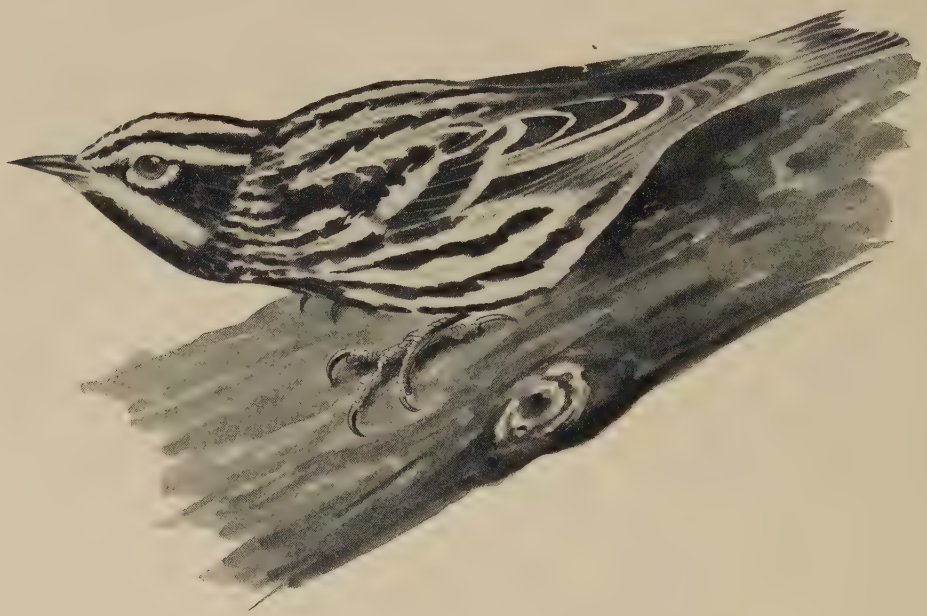


FIG. 220. BLACK-AND-WHITE WARBLER.

The only nest C. S. Brimley ever found at Raleigh was on a sloping hillside, and was tucked in under the pine straw at the base of two small pines standing close together. The same observer also found a nest at Andrews, which was on almost level ground at the end of a prostrate log. Pearson discovered a nest under an exposed root on a wooded hillside, in May, 1896, at Guilford College. It contained three newly hatched young.

In habits this species resembles a nuthatch rather more than a warbler, as it keeps continually running up and down the trunks or along the limbs of trees in a manner not unlike that of the White-breasted Nuthatch.

Genus Protonotaria (Baird)

273. Protonotaria citrea (*Bodd.*). PROTHONOTARY WARBLER.

Description.—Head, neck, and underparts, except lower tail-coverts, rich orange yellow, lighter on the belly; back olive-green; wings and tail bluish gray; lower tail-coverts white. Female similar, but with the top of head olive-green instead of yellow. Extreme measurements of 17 specimens from Wake, Bertie, and Craven counties: L., 5.35–5.75; W., 2.60–3.00; T., 1.65–2.00.

Range.—Mississippi Valley and southeastern States, ranging in the east to southern Virginia. Winters in the West Indies, Central and South America.

Range in North Carolina.—Lower Austral region of State, from Raleigh eastward, in summer.

The Prothonotary Warbler is a common summer bird in our eastern swamps, arriving from the south about the middle of April and remaining as late as early September. It nests in holes in trees or stumps. The nest lining consists of fine grass, moss, and other materials, forming a compact mass on which five or six eggs are laid. These are white with spots and blotches of lavender, reddish brown, purple, and black, the markings in some cases being so extensive as almost to hide the ground-color, and again merely forming bold but scattered markings. Size .70 x .52. (For further information as to its nesting habits, see Barnes in *The Ornithologist and Oölogist*, March, 1889.)

In this State we have but few records of nests having been found. One was found by Pearson on May 12, 1898, near Cape Hatteras. It contained four slightly incubated eggs, and was in a natural cavity of a living holly tree, twelve feet from the ground. Another, containing young, was discovered by Philipp and Bowdish on Great Lake, in June, 1909.

This strikingly beautiful Warbler is essentially a lover of water, being abundant in cypress swamps and along sluggish streams.

The localities from which it has been recorded in the State are Bertie County; Raleigh and Wakefield in Wake County; White Lake in Bladen County; the Craven County lakes; Elizabeth City, Pasquotank County; Cape Hatteras, Dare County; Beaufort, Carteret County; Gatesville, Gates County; Orton, Brunswick County; and Jacksonville, Onslow County.

Genus Helinaia (Aud.)

274. Helinaia swainsoni (*Aud.*). Swainson's Warbler.

Description: Ads.—Crown cinnamon-brown; a whitish line over the eye; back, rump, wings, and tail olive-grayish brown without white; underparts soiled, yellowish white, grayer on the sides. L., 5.00; W., 2.75; T., 1.90; B. from N., .46. (Chap., *Birds of E. N. A.*)
Range.—South Atlantic and Gulf States, wintering in the West Indies.
Range in North Carolina.—Swamps of the coastal region.

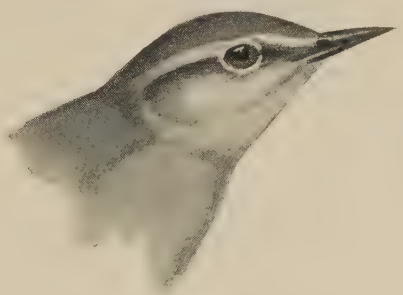


Fig. 221. Swainson's Warbler.

This is a plain-colored warbler, inhabiting the canebrakes and swamps of the Lower Austral Zone in the United States, and in this State has been recorded from Craven County, where a single specimen was taken on April 13, 1885, by

H. H. Brimley. In the same county individuals were heard singing in the woods between Little Lake and Lake Ellis in May, 1907 and 1908, by C. S. Brimley. Bowdish and Philipp in June, 1909, discovered one feeding young in the woods near Great Lake, Craven County. J. E. Gould, of Berkeley, Virginia, writes us that he found a nest containing four slightly incubated eggs near Edenton, N. C., on May 10, 1906. He also saw birds in the same region in 1907.

The nest is large, loose, and bulky, and is placed in a low bush or bunch of canes, usually but a few feet from the ground. The eggs are pure white, unmarked. Size .75 x .57.

This bird is shy, preferring swamps or damp woods, where it may be heard uttering a loud song, resembling somewhat that of the Louisiana Water-Thrush.

Genus Helmitheros (Raf.)

275. Helmitheros vermivorus (*Gmel.*). WORM-EATING WARBLER.

Description: Ads.—A black line from the eye to the nape, and two on the crown from either nostril; an olive-buffy line over each eye, and a third through the center of the crown; back, wings, and tail olive-green without white; underparts whitish cream-buff, whiter on the throat and belly. L., 5.51; W., 2.78; T., 2.05; B. from N., .39. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States, wintering in West Indies and Central America.

Range in North Carolina.—Apparently the whole State in summer, but not common.

FIG. 222. WORM-EATING WARBLER.

This neat, plain species arrives in our State the middle or latter part of April, and has been recorded in late September. While chiefly a migrant, it has been noted occasionally in summer. In Bertie County it has been found breeding on one occasion. In the mountains it seems to be more common in summer. Cairns reported it as a rare breeder in Buncombe County. Bruner says it was common in June, 1909, in Alexander County. It has also been reported as a migrant in Cherokee and Orange counties, and as occasional in summer and frequently not uncommon during the migrations in Wake County.

The nest is built on the ground, usually on a sloping hillside in mixed woods, and is composed of dry leaves lined with finer material. The eggs are four in number, white in color, heavily speckled with chestnut, chiefly near the larger end. Size .65 x .52.

Like the Black and White Warbler, it is often seen running about on the trunks and limbs of trees. C. S. Brimley speaks of having seen it frequently picking something, presumably insects, from bunches of dead leaves hanging from the branches.

Genus Vermivora (Ridgw.)

KEY TO SPECIES

1. Tail-feathers with distinct white blotches. See 2.
1. None of the tail-feathers blotched with white. See 6.
2. Wings plain olive-green. *Bachman's Warbler.*
2. Wings with greater and middle coverts tipped more or less broadly with white or yellow. See 3.
3. Throat and ear-coverts black in male, dusky in female.
3. Throat pure yellow or white in both sexes.
4. Cheeks and lower parts white. *Golden-winged Warbler.*
5. Lower parts pure yellow. *Blue-winged Warbler.*
6. Wing an inch longer than the short tail. *Tennessee Warbler.*
6. Wing only half an inch longer than tail. See 7.
7. Head olive-green above, no orbital ring. *Orange-crowned Warbler.*
7. Head ashy above, a pale orbital ring. *Nashville Warbler.*

276. Vermivora bachmani (*Aud.*). BACHMAN'S WARBLER.

Description.—Uniform olive-green above, forehead and underparts yellow. Male with a black band across front of crown, and a large black patch on throat and breast, surrounded by yellow. Female similar, but with no black on crown, and with that of breast replaced by dusky olive. Measurements of 2 Raleigh specimens: L., 4.85–4.83; W., 2.45; T., 1.83, the last two measurements being the same in each bird.

Range.—South Atlantic States and Mississippi Valley, north to Missouri and Virginia.

Range in North Carolina.—So far, known only from Raleigh.

FIG. 223. BACHMAN'S WARBLER.

Only two specimens of this rare species have been found in North Carolina. These were two full-plumaged males taken by C. S. Brimley at Raleigh, one on April 27, the other May 22, 1891, both being in song at the time.

The first nest of this species ever discovered was taken by Otto Widmann (see *Auk*, July, 1897) in Dunklin County, Missouri, on May 17, 1897. It was in a swamp, and was situated two feet from the ground in a blackberry vine. It was composed of leaves and grass blades, lined with a peculiar black rootlet, and contained three white, unmarked eggs, two of which measured .63 and .64 in length by .48 and .49 in width. The Bachman's Warbler has since been found breeding near Charleston, S. C., by Wayne, and the bird doubtless breeds more or less commonly all through the Lower Austral Zone in the southeastern States. It is a low-ground loving species, and should be looked for in the swamps of our eastern section.

277. Vermivora pinus (*Linn.*). BLUE-WINGED WARBLER.

Description: Ad. male.—Crown and entire underparts bright yellow, a black line through the eye; back and rump bright olive-green; wings and tail bluish gray; greater and middle wing-coverts tipped with white or yellowish white; outer three tail-feathers with large white patches on their inner webs, fourth feather with a much smaller patch. *Ad. female.*—Similar, but yellow on the head confined to the forehead; underparts duller. L., 4.80; W., 2.40; T., 1.80; B. from N., .33. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States in summer, but mainly west of the Alleghanies, except north of latitude 40°. Winters in Mexico and Central America.

Range in North Carolina.—So far, only known as a rare transient at Raleigh and a rare summer visitor in Buncombe County.

FIG. 224. BLUE-WINGED WARBLER.

The Blue-winged Warbler appears to be partial to upland woods, in or near which it builds its nest on the ground or only a few inches above it. The eggs are four or five in number, and are white in ground-color, speckled faintly and sparingly with brown. Size .65 x .51.

We have very few records of this species in the State, and outside of Raleigh it has been recorded only from Buncombe County, where Cairns called it an uncommon summer visitor, adding that it bred in that region; Pearson found two males at Montreat, Buncombe County, in July, 1903. At Raleigh it has been taken on May 6, 1907, and April 30, 1915, in spring, and on various dates from August 20 to September 4 in the fall, having been taken by H. H. and C. S. Brimley and Bruner. Only two of the specimens secured were females, and these had the wing-bars tinged with yellow, and not pure white. All the Raleigh specimens were found in woods of mixed pine and oak.

278. Vermivora chrysoptera (*Linn.*). GOLDEN-WINGED WARBLER.

Description.—Ashy gray above; forehead, crown, and wing-patch bright yellow; throat and loral stripe and ear-coverts, black in adult males, deep gray or dusky olive in females. Cheeks, above and below the black, and lower parts, white. L., 5.10; W., 2.45; T., 1.95.

Range.—Eastern North America, breeding from North Carolina (in the mountains) northward. Wintering in West Indies, Mexico, etc.

Range in North Carolina.—So far, known as a transient at Raleigh and a summer visitor in the mountains.

The Golden-winged Warbler, easily known from our other species by the black throat, ashy upperparts, and yellow wing-patch, has been taken at Raleigh only on May 7 in 1889, the same date, 1891, and on August 26, 1886, and August 30, 1893. In the mountains, however, it appears to be more common, arriving apparently

late in April, as a rule, though we have it recorded one year from Weaverville as early as April 9. It has also been reported from Jackson and Macon counties, by Brewster, as being common in 1885 at from 2,000 to 4,000 feet elevation, and from Andrews, in Cherokee County, by Mrs. Wilson. Cairns states that in Buncombe County it is found in summer from 3,500 feet elevation upward, and that it breeds in June. The nest is built on the ground under a small bush or tussock. The eggs are usually four, pure white, sparsely speckled with brown.

Fig. 225. Golden-winged Warbler.

Besides the above records, Sherman saw a single male at Blantyre, Transylvania County, early in May, 1908, and another, near Highlands, a few days later.

A single specimen of the so-called Brewster's Warbler, *Vermivora leucobronchialis* (Brewst.), was taken at Raleigh by H. H. Brimley on September 6, 1888, and was identified by Brewster. The color was a mixed greenish and bluish above, the rump, however, being without any bluish tint; the loral strip was black, and there were black traces on the auriculars; underparts mostly white except the forepart of the breast, which was mostly yellow; throat and neck below white, chin yellow. Crown, forehead, and wing-bars bright yellow.

This form, which is not infrequently found in the Connecticut Valley in summer, and less often in other portions of the Eastern States, is now considered by many ornithologists to be a hybrid between the Golden-winged and Blue-winged Warblers, or possibly a color-phase of the Blue-winged Warbler.

Besides this form, which may be considered as a Golden-winged Warbler that has lost its black throat and ear-patches and acquired a little more yellow in its plumage, or as a Blue-winged Warbler with the olive-green of the upperparts turned to ashy and the yellow of the underparts turned to white, another extraordinary variety is also considered to be a hybrid between the same two species. This is Lawrence's Warbler, *Vermivora lawrencei* (Herrick), which is colored like a Blue-winged Warbler above and below, but possesses a black throat and ear-patch like the Golden-winged Warbler, and the wing-bars are said to be usually white. It is a very much rarer bird than the Brewster's Warbler, and much more constant in its characters. It has not, to our knowledge, been observed in North Carolina.

279. Vermivora rubricapilla rubricapilla (*Wils.*). Nashville Warbler.

Description.—Olive-green, ashy on head and neck, the color contrasting with that of back; crown-patch bright chestnut, more or less concealed; underparts bright yellow. Lores and orbital ring pale. Female duller, with crown-patch obscure. L., 4.77; W., 2.35; T., 1.82.

Range.—Eastern North America, breeding in northern United States and northward, wintering in Mexico and Central America.

Range in North Carolina.—Recorded by Cairns as a rare transient in Buncombe County.

So far, the only authority on which this bird can be included in our list is Cairns, who stated that the species was a rare transient in Buncombe County (see Smithwick's *Catalogue of Birds of North Carolina*, page 217).

"Wilson, the discoverer of this species, found only the three specimens, taken near Nashville, Tennessee, on which his description was based; and in the early part of the last century it was considered a rare bird. Brewster, quoting Samuel Cabot, says that soon after 1836 'a few birds began to appear every season. They increased in numbers, gradually but steadily, until they had become so common that in 1842 he obtained ten specimens in the course of a single morning.'

"Recounting his own experience in the Cambridge region, Brewster adds: 'In 1868, and for some fifteen years later, I found Nashville Warblers breeding rather numerously in Waltham, Lexington, Arlington, and Belmont, usually in dry and somewhat barren tracts sparsely covered with gray birches, oaks, or red cedars, or with scattered pitch-pines. A few birds continued to occupy certain of these stations, but in all of the towns just mentioned the Nashville Warbler is less common and decidedly less generally distributed in summer now than it was twenty-five or thirty years ago.'

"Gerald Thayer writes: 'Birch Warbler' would be a good name for this bird, as it appears in the Monadnock region, where it breeds abundantly. For here it is nowhere so common as in abandoned fields and mountain pastures half smothered by small gray birches. From the airy upper story of these low and often dense birch copses the Nashvilles sing; and among the club-mosses and ferns, and the hardhacks and other scrubby bushes at their bases and around their borders the Nashvilles build their nests. But such is merely their most characteristic home. They are so common and widespread that it is hard to get out of earshot of their song during the breeding season. Dark spruce woods they do not favor, nor big, mixed virgin timber; but even in these places one is likely to find them wherever there is a little 'oasis' of sunlight and smaller deciduous growth. They are fairly common among the scanty spruces, mountain ashes, and white birches of the rocky upper ridge of Mount Monadnock, almost to the top—3,169 feet.

" 'The Nashville's proper domain or "beat," during the breeding season, lies between the ground and the tops of the lower trees—mainly deciduous trees. He is a little, active, foliage-colored Warbler, unshowily yellow-breasted, inconspicuously gray-headed (except for a yellow throat, and a rufous crown-spot which scarcely shows at all), with a dim white eye-ring, but without white tail-spots, wing-bars, or any other bold markings. In demeanor it is one of the most nervously agile and restless of the gleaning warblers.' (THAYER, MSS.)." (Chapman's *Warblers of North America*.)

280. **Vermivora celata celata** (*Say*). ORANGE-CROWNED WARBLER.

Description.—Olive-green, never ashy on head; crown-patch orange brown, more or less concealed; underparts greenish yellow. L., 5.00; W., 2.55; T., 1.95.

Range.—Northern North America, casually on the Atlantic coast during the migrations. Winters in the South Atlantic and Gulf States and southward.

Range in North Carolina.—Only known as an occasional fall migrant and winter visitor in Buncombe and Currituck counties.

FIG. 226. ORANGE-CROWNED WARBLER.

Taken by Cairns on October 18, 1893 (male), and on January 15, 1894 (female). Both of these records were furnished us by Brewster, in whose collection the specimens are now preserved. One was collected by Ludlow Griscom at Pamunkey

Island, Currituck County, on January 3, 1915. The specimen is in the American Museum of Natural History, New York City.

Ludlow Griscom writes further regarding this species: "One seen very satisfactorily by J. M. Johnson and L. G., December 31, 1916, on Pamunkey Island (Currituck Sound). L. G. well acquainted with this bird in several States."

281. Vermivora peregrina (*Wils.*). TENNESSEE WARBLER.

Description.—Olive-green above, head more or less ashy and without crown-patch; underparts white or slightly yellowish. Known from the two preceding species by the comparatively long wings and short tail. Extreme measurements of 12 specimens from Raleigh and Weaverville: L., 4.65–4.85; W., 2.45–2.65; T., 1.65–1.75.

Range.—Breeds in northern North America, mainly north of the United States; migrates chiefly in the Mississippi Valley, and winters in Mexico and in Central and South America.

Range in North Carolina.—A transient in fall only; so far, recorded from Wake and Buncombe counties.

The Tennessee Warbler is one of those birds which pass through our State in fall on their way south from their summer homes, but appear not to visit us on their return trip in spring.

It has been taken in Wake County, near Raleigh, only four times, but in Buncombe County Cairns considered it tolerably common at that season. The dates for the two counties are about the same, the earliest one being September 10 and the latest October 29.

This is about the dullest colored and most inconspicuous of the warblers.

Genus Compsothlypis (Cab.)

282. Compsothlypis americana americana (*Linn.*). PARULA WARBLER.

Description.—Clear ashy blue; back with a large golden-green patch. Underparts, except belly (which is white), mostly yellow; a brown band across breast; wing-bars white. Female smaller and duller than the male. Autumnal birds with the upperparts mainly olive-green, and the brown bar on breast almost or quite absent. Extreme measurements of 130 Raleigh specimens: L., 4.25–4.85; W., 2.15–2.50; T., 1.50–1.85.

Range.—Eastern North America in summer, breeding throughout its range, wintering in southern Florida, the West Indies, Mexico, and Central America.

Range in North Carolina.—Common summer visitor throughout the State.

The Parula Warbler, formerly called the "Blue Yellow-backed Warbler," arrives in our State early in April and has been noted as late as October 27. It appears to be more plentiful during the migrations, particularly in fall, when it is often the most abundant of all the birds in the woods.

The nest is frequently built in a bunch of the hanging gray lichen (*Usnea*), and is made by weaving the fibers of the plant together, but little building material being brought from outside. The entrance is on the side, and the nests are usually in trees standing near water, as it is in such a situation that the *Usnea* is generally found growing. Occasionally the nest is built in a bunch of the hanging or Spanish moss (*Tillandsia usneoides*), as was the case with one found under construction on the edge of Great Lake, in Craven County, by H. H. Brimley, in late May, 1908, and another found at Lake Ellis by Pearson in June, 1903. Two sets of eggs were taken by Smithwick in Bertie County in late April, 1896, and mid-

June, 1897, both from nests hidden in bunches of *Usnea* at heights of five and ten feet respectively. Both nests were lined with feathers and hair. A nest was taken by McLaughlin in Iredell County on May 11, 1887, and Cairns reported the species breeding in Buncombe County in May and June, the nests averaging about twenty-five feet from the ground.

FIG. 227. PARULA WARBLER.

The eggs number three to five, pure white, and are speckled around the larger end with reddish brown and lilac. Size .65 x .48.

This species is one of the smallest and most dainty of our warblers, and in summer is a familiar feature of our damp lowland woods. In August and September it is to be seen migrating in great numbers in upland woods.

283. Compsothlypis americana usneæ (*Brewst.*). NORTHERN PARULA WARBLER.

Description.—Similar to preceding, the chest darker and more conspicuously marked; the bill averaging somewhat shorter.
Range.—This is the Northern and Mississippi Valley form of the species.
Range in North Carolina.—So far, only known from Raleigh, as a spring migrant.

Years ago C. S. Brimley took a single spring specimen of this form of the Parula Warbler at Raleigh. The heavy markings on the breast were very pronounced.

Genus Dendroica (Gray)

This, the largest and most important genus of the warblers, contains nineteen species and subspecies that are found in the eastern United States. All but one of these are known to occur in North Carolina.

KEY TO SPECIES

1. Tail-feathers edged with yellow; plumage chiefly yellow. *Yellow Warbler.*
1. Tail-feathers, at least the outer ones, blotched with white. See 2.
2. A white blotch on the primaries at their bases; no wing-bars. See 3.
2. No white blotch on the primaries. See 4.
3. Male with considerable black on upperparts. *Cairn's Warbler.*
3. Male with little or no black on upperparts. *Black-throated Blue Warbler.*
4. Wing-bars not white. See 5.

4. Wing-bars white. See 9.
5. Back ashy; whole underparts yellow. *Kirtland's Warbler.*
5. Back not ashy. See 6.
6. Underparts white; crown and wing-patch more or less yellow. *Chestnut-sided Warbler.*
6. Underparts more or less yellow. See 7.
7. Wing-bars and belly yellow. *Prairie Warbler.*
7. Wing-bars brownish; tail-spots square, at end of two outer tail-feathers only. See 8.
8. Adults with entire lower parts bright yellow. *Yellow Palm Warbler.*
8. Adults with belly mainly whitish. *Palm Warbler.*
9. Rump yellow. See 10.
9. Rump not yellow. See 11.
10. Crown, rump, and sides of breast with yellow; throat white. *Myrtle Warbler.*
10. Crown black with a median stripe of orange-brown; an orange-brown ear-spot; bill acute, perceptibly decurved. *Cape May Warbler.*
10. Crown ashy; underparts yellow with black streaks; spots at the middle of nearly all the tail-feathers. *Magnolia Warbler.*
11. Crown with orange or yellow spot; throat orange or yellow. *Blackburnian Warbler.*
11. Crown with no orange or yellow. See 12.
12. White spots at the ends of nearly all the tail-feathers; no definite yellow anywhere. *Cerulean Warbler.*
12. Spots not at the end of nearly all the tail-feathers. See 13.
13. Throat black, sometimes obscured by yellow tips to feathers; outer tail-feather white-edged externally. *Black-throated Green Warbler.*
13. Throat not black. See 14.
14. With no definite yellow anywhere. See 15.
14. With some yellow. See 16.
15. Crown and throat chestnut in spring male; crissum buffy. *Bay-breasted Warbler.*
15. Crown black in spring male; crissum white. *Black-poll Warbler.*
16. Back and cheeks yellowish olive; tail-spots oblique, at end of two outer tail-feathers only. *Pine Warbler.*
16. Back ashy blue; cheeks black. See 17.
17. Superciliary line yellow in front; bill longer than middle toe. *Yellow-throated Warbler.*
17. Superciliary line wholly white; bill not longer than middle toe. *Sycamore Warbler.*

The above key should enable the careful student to identify most specimens that come into his hands without great difficulty. It must always be borne in mind, however. that females and autumnal birds as a rule are much more difficult to identify than spring males. The sexes in some species are very dissimilar; in the Black-throated Blue Warbler, for instance, the only point common to both sexes is the white blotch on the bases of the primary quills. In others, however, the sexes are substantially alike, as is the case with the Prairie and Yellow-throated Warblers. In the majority of the species, however, the sexes are decidedly different, and in many the fall plumage differs strikingly from that worn in the spring, in which case it usually is more or less like the spring plumage of the female, but often softer and duller.

284. **Dendroica tigrina** (*Gmel.*). CAPE MAY WARBLER.

Description.—Olivaceous above, with black streaks; rump and sides of neck bright yellow; underparts yellow, much streaked with black; crown mostly black; ear-coverts orange brown; a white wing-patch. Female duller, with no black or reddish on the head. Extreme measurements of 3 specimens from Blantyre and 2 from Raleigh: L., 4.85–5.25; W., 2.40–2.65; T., 1.63–1.95.

Range.—Eastern North America, breeding from northern United States northward; winters in the West Indies.

Range in North Carolina.—A transient in the mountain regions and to some extent in the central portions of the State.

The Cape May Warbler has so far been recorded in our State from Asheville and Weaverville in Buncombe County; Hendersonville in Henderson County; Blantyre in Transylvania County; Andrews in Cherokee County; Morganton in Burke County, and from Raleigh. At the last place it has been taken on April 7 and May 9, 1892, by C. S. Brimley, and in early May, 1909, and late April and early May, 1915, by Bruner, while in the various mountain localities the dates run from April 22 to May 15. Feild reports it tolerably common at Chapel Hill, April 26-May 3, 1909. The only fall record comes from Weaverville, where Cairns observed

it on September 15 and 17, 1894. The only place from which it has been reported as common is Morganton, where Wayne reported it to be migrating in numbers from April 22 to May 15, 1909.

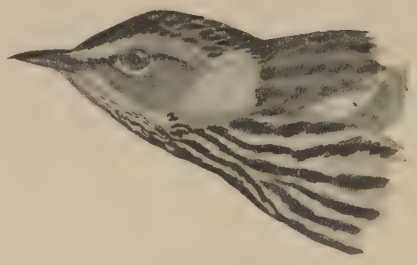


FIG. 228. CAPE MAY WARBLER.

An adult male was secured at Raleigh on November 1, 1911, and an immature bird was sent to Sherman from Cleelum, near Asheville, accompanied by a letter, dated September 25, 1911, from which the following extracts are taken:

I had a fine lot of grapes, but the birds have destroyed the most of them before we could gather them. The birds destroyed at least $75 worth for me, and messed them up so badly they were not worth gathering. It is a small bird, evidently of the warbler family, dull yellowish gray above, a lighter yellowish gray below, with breast streaked with both colors. It has a beak like a needle. It does not eat the grapes, but simply pricks holes in them and lets them ferment for the bees to get drunk on next day. I have seen many berries with two holes punched into them about 1-16 inch apart as though it had not even closed its beak in pricking them. Could it suck the juice of the grape without closing its beak? Please tell me how to stop these birds next season. I have turned things over to them this year. There are thousands of them, evidently migrating, but they will not bunch so that one can shoot them, and they will not scare off any more than bees. They are too small to shoot singly. They do not seem to eat any grain or meal, only destroy grapes and eat a few moths. I will try to get a few and send one with this letter.
E. V. HARBECK, M.D.

Mr. Frank L. Burns, of Berwyn, Pa., writing in *The Auk* of April, 1915, describes in detail the great amount of damage done to the grape crop in that region in September, 1913 and 1914, by Cape May Warblers. Speaking of this damage in his immediate neighborhood, he says: "So far as I am able to learn, all unbagged grapes were ruined; the loss must have been many tons, worth several hundred dollars."

285. Dendroica æstiva æstiva (*Gmel.*). YELLOW WARBLER: SUMMER YELLOW-BIRD.

Description: Ad. male.—Upperparts bright greenish yellow, brighter on the crown; wings edged with yellow; tail fuscous, the inner vanes of the feathers yellow; underparts bright yellow, streaked with rufous. *Ad. female.*—Upperparts uniform yellowish olive-green; tail as in the male; wings fuscous, edged with yellow; underparts bright yellow, slightly, if at all, streaked with rufous on the breast and sides. *Im. male.*—Similar to the female. *Im. female.*—Upperparts light olive-green; tail fuscous, the inner margins of the inner vanes of the tail-feathers yellow; underparts uniform dusky yellowish. L., 5.10; W., 2.40; T., 1.89; B. from N., .33.

Remarks.—In any plumage this bird may be known by the yellow on the inner vanes of the tail-feathers. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, east of the Rocky Mountains, wintering in Mexico, Central and South America.

Range in North Carolina.—Summer visitor in the central and western districts, but apparently only a transient in the east.

The Yellow Warbler is a common summer visitor from Raleigh westward to the mountains, where it breeds up to 3,500 feet elevation. At Raleigh it arrives from the south about the middle of April, and the breeding birds apparently leave in July and August, though an occasional specimen, probably a migrant from farther north, is sometimes observed later. These dates seem also to apply to the rest of its breeding range in the State. At Raleigh there is a distinct migration of birds that nest farther north. These pass through during the first half of May, and curiously enough are not found in the same situations as those that breed here. Thus, while the summer residents appear in mid-April in upland groves and in the shade-trees along our village streets, the migrants are only found in the lowlands, and do not come until two or three weeks later.

The species seems to breed entirely in orchards, shade trees, and upland groves, apparently rarely nesting in what might be called natural forest conditions. The nest is built as a rule in some small tree, at a height of from seven to twelve feet, and is a warm, compact structure, into the composition of which cotton often enters. Frequently it is lined with horsehair. The eggs are laid in May or June, and are usually five in number, of a greenish white ground color, spotted around the larger end with brown, black, and lilac-gray. Size .65 x .50. Pearson has found these familiar warblers nesting commonly in climbing rosebushes in Guilford County.

286. Dendroica cærulescens cærulescens (*Gmel.*). BLACK-THROATED BLUE WARBLER.

Description.—Male rich gray blue, with or without a few black streaks on back; throat, sides of head, and neck, and sides of body, black; otherwise pure white below. Female dull olive-greenish, obscurely marked, known by the white patch at base of primaries, which is, however much smaller than in the male. Extreme measurements of 71 Raleigh specimens: L., 4.90–5.30; W., 2.32–2.80; T., 1.85–2.20.

Range.—North America, from the Mississippi Valley eastward, breeding in northern New England and northward, and wintering in the West Indies.

Range in North Carolina.—Whole State during the migrations.

The Black-throated Blue Warbler is a common spring and fall transient in all parts of the State, appearing in spring from late in April until the middle of May. Returning, it is with us from late September to the end of October. It frequents the thick undergrowth in woods, rarely being seen in high trees.

287. Dendroica cærulescens cairnsi (*Coues*). CAIRNS'S WARBLER.

Description.—Similar to the Black-throated Blue Warbler, but darker; the adult male darker above, the middle of the back with much black. The female is almost indistinguishable from that of the preceding.

Range.—Breeds in the southern Alleghanies; winters in the West Indies.

Range in North Carolina.—Breeds in the greater part of the mountain region from 3,500 feet up.

Cairns's Warbler arrives in the mountains a little earlier than the Black-throated Blue Warbler comes to the central portion of the State, but judging from Cairns's records at Weaverville it leaves the State about the same time.

It passes the summer on the higher mountains, and was found by Brewster in 1885 invariably in or near extensive tracts of rhododendron, occupying the Canadian Zone and part of the Alleghanian Zone. Cairns states that he found it com-

mon on Black Mountain in summer as low down as 3,000 feet, and that it breeds in May, but adds he had never found it on Craggy Mountain. Bruner found it the most abundant warbler at Blowing Rock in the summers of 1905, 1906, and 1907. Rhoads recorded it as common on Roan Mountain from 3,500 to 4,500 feet in June, 1895. Both Mrs. Wilson and Collett say that it breeds on the mountains near Andrews, in Cherokee County.

In May, 1908, C. S. Brimley collected a few specimens of the Black-throated Blue Warbler in the mountains, which deserve notice in this connection. They consisted of a male taken at Blantyre, evidently a transient, from the undeveloped condition of the sexual organs; two males taken at Highlands, one of which, judging from the condition of the testes, was a transient, and the other a breeding bird, all three being typical Black-throated Blue Warblers without any black on the back. Beside these, he secured two on Joanna Bald Mountain, near Andrews, which appeared to be breeding birds, but while one has considerable black streaking on the back, the other has scarcely any. Bruner took a migrant at Raleigh, on April 27, 1908, which had as much black on the back as the most heavily marked of the above, and this probably should be considered a Cairns's Warbler.

Two breeding males collected by Bruner and Feild near Blowing Rock in late June, 1911, showed marked differences of plumage. One was very heavily marked with black on the back; the other had no trace of black markings and was duller colored in every way. In the summer of 1911 they found this species present on Grandfather Mountain, where a nest with three eggs was found on June 22. On Roan Mountain birds were seen feeding young on July 9. This was at Harvard, Yancey County, at an elevation of only 3,000 feet.

From the data available we are led to believe that Cairns's Warbler is simply the extreme plumage of the breeding males of our mountains, and that others of the breeding males are indistinguishable from typical Black-throated Blue Warblers.

Ladd, in the *Ornithologist and Oölogist* for September, 1892, gives an interesting account of the breeding of these birds on Craggy Mountain, which he visited in company with Cairns. Nests were found by him at elevations of from 4,000 to 6,000 feet, many being examined from May 5 to 26. They were mostly built in a weed known as the rattle-weed (*Caulophylum thalictroides*), but one was among rhododendron shoots. They were composed externally of strips of rhododendron or grapevine bark, interwoven with pieces of birch bark, moss, and spider-webs, and were lined with fibers. They varied from ten inches to three feet from the ground. The eggs were greenish white in ground-color, or sometimes buffy white, and were more or less heavily marked with different shades of brown and lilac, sometimes in a wreath round the larger end and sometimes all over. In shape some were rounded, one of these measuring .62 x .52. Others were elongate, one of these latter being .68 x .59. The favorite haunts of this form, according to Ladd, are among the rank weeds and ferns that spring from between the rocks and fallen trees in the more heavily timbered ravines—places invariably spoken of by the country folks as "rattlesnake dens."

288. Dendroica coronata (*Linn.*). MYRTLE WARBLER.

Description.—Bluish ash above, streaked with black; underparts white with heavy black streaks on breast; crown-patch, rump, and each side of breast bright yellow. Winter birds brownish, with the markings dull and obscure, but the four yellow patches are always evident, though much less conspicuous than in late spring birds. Extreme measurements of 72 specimens from Raleigh: L., 5.07–5.85; W., 2.60–3.07; T., 2.00–2.45.

Range.—Northern North America in summer, breeding from northern New England northward, and wintering in the greater part of the United States.

Range in North Carolina.—Whole State in winter, ranging up to 2,000 feet in the mountains.

FIG. 229. MYRTLE WARBLER.

The Myrtle Warbler is commonly seen in North Carolina in its dull winter plumage, arriving from the north about the middle of October, and leaving early in May. Some, it is true, linger a little longer, the latest dates for Andrews and Weaverville, in the mountains, and for Raleigh, on the plains, being the same, viz., May 18. This is one of the species which has a spring moult as well as the usual one in the fall, the birds changing to the bright summer plumage in late April and early May, just when they are leaving us. Other species of the genus evidently have a spring moult also, but not while in the United States, the Bay-breasted and Black-poll Warblers being good examples of this, while the Pine Warbler, on the other hand, has only the usual fall moult.

Warblers as a rule are insectivorous, yet it is evident that those which pass the winter with us cannot be insect-eaters exclusively. The food of the Myrtle Warbler, while in North Carolina, consists mainly of berries, such as frost-grapes and berries of the sumac, poison oak, *Ilex* and red cedar. On March 4, 1898, Pearson found these birds swarming literally by hundreds among the yaupons and cedars on Shackleford Banks near Beaufort. This bird is a fly-catching warbler, frequently flying from its perch in pursuit of passing insects.

289. Dendroica magnolia (*Wils.*). MAGNOLIA WARBLER.

Description.—Back black, with olive edgings to the feathers; rump yellow; head clear ash; underparts rich yellow with black streaks; crissum white. Females and young males are much duller, but may be identified by the fact that they have white spots at the middle of nearly all the tail-feathers. Extreme measurements of 17 specimens from Raleigh and Weaverville: L., 4.75–5.15; W., 2.15–2.50; T., 1.90–2.15.

Range.—Northern North America in summer, breeding from northern United States northward, and south along the higher mountain ranges; winters in Mexico and Central America.

Range in North Carolina.—Spring and fall transient, from Raleigh westward to the mountains; breeds to some extent on the higher mountains.

The Magnolia Warbler is quite a rare spring migrant in the central part of the State, having been observed in spring at Raleigh only four times, these all being between May 10 and 15. In fall it is more often seen and has been taken at different times between September 11 and October 20.

In the mountain regions it has been noted somewhat more commonly in spring, the dates ranging from April 30 (1905), at Andrews, to May 19 (1899), at Asheville, while the latest fall date is October 15 (1902), at Andrews.

Cairns says that the young are common in July. Davis in a migration schedule from Asheville, for 1899, states that a nest and eggs had been taken by Cairns and were then in the collection of Dr. Samuel B. Ladd, of West Chester, Pennsylvania.

When flitting about in the woods this bird frequently spreads the tail and exhibits the conspicuous white bar across it, which is hidden by the unmarked middle pair of feathers when the tail is closed.

FIG. 230. MAGNOLIA WARBLER.

The nests are usually built on horizontal twigs of fir or spruce trees at a height of from four to six feet, but sometimes very much higher, and the situations chosen are often along roads or other openings in the forest. The nest is loosely constructed of fine twigs, coarse grasses, and weed stems, lined with fine black roots. The eggs are most frequently creamy white in color, spotted and blotched with various shades of brown, the markings often forming a wreath round the larger end. Size .63 x .48.

290. **Dendroica cerulea** (*Wils.*). CERULEAN WARBLER.

Description.—Bright blue, with black streaks above; underparts white, a bluish-black band across breast. Female not streaked, greenish above, slightly yellowish below. The species can be known in all plumages by its having white spots near the end of nearly all the tail-feathers. Extreme measurements of 3 Raleigh specimens: L., 4.34–5.00; W., 2.45–2.50; T., 1.60–1.85.

Range.—Eastern United States, mainly west of the Alleghanies, breeding most abundantly in the Ohio Valley. Winters in South America.

Range in North Carolina.—Known as a migrant in the mountains and at Raleigh. Has been found to breed near Morganton.

Cairns recorded this species as a rare transient in Buncombe County, and three females have been taken at Raleigh by H. H. Brimley, the dates being May 8, 1893; August 29, 1889; and September 16, 1887.

The most interesting record, however, is that of Wayne, who saw an adult male in company with a young bird just able to fly, near Morganton, on May 28, 1909, thus conclusively proving that this dainty little warbler breeds in our State. (See *Auk*, Jan., 1910, pp. 84–5.)

The nest is said to be built high up in trees in deciduous woods, and to be a compact, cup-shaped structure. The eggs are white, speckled with brown, and measure .69 x .53. From the above record of Wayne it would appear that the eggs were laid near Morganton in early May.

FIG. 231. CERULEAN WARBLER.

291. Dendroica pennsylvanica (*Linn.*). CHESTNUT-SIDED WARBLER.

Description.—Blackish above, much streaked with whitish olive; crown clear yellow; black patch about eye; pure white below, a line of bright chestnut streaks along sides; wing-patch yellowish, never clear white. Females much duller; fall birds bright yellowish green above and white below, with little or no chestnut on side except in the adult male. Extreme measurements of 21 specimens from Raleigh and Weaverville: L., 4.85–5.20; W., 2.25–2.62; T., 1.75–2.00.

Range.—Eastern North America, breeding rather northerly, except in the mountains. Winters in Mexico and Central America.

Range in North Carolina.—Transient in the central part of the State, but summer visitor in the mountains, where it breeds above 2,000 feet.

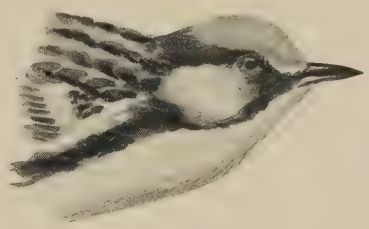


FIG. 232. CHESTNUT-SIDED WARBLER.

The Chestnut-sided Warbler is a rare spring and rather common fall transient in central North Carolina, where it has been observed from April 27 to May 15 in the spring, and from August 17 to October 12 in autumn.

In the mountains it is common in summer between 2,000 and 4,000 feet of elevation, the earliest spring arrival being noted on April 21, and the latest departure in fall on September 22. C. S. Brimley took a female just ready to lay, close by

its nest, at Blantyre on May 5, 1908, and Cairns found a nest, May 25, 1887, on Craggy Mountain. The latter was in open woods, and was placed in a rhododendron bush at a height of only three feet. The structure was very neat and compact. The eggs are usually four, white, and speckled with brown, chiefly at the larger end, where the spots frequently form a wreath. Size .68 x .50.

Other mountain localities from which it has been recorded in summer are Asheville, Highlands, Andrews, Blowing Rock, and Roan Mountain.

This species seems to prefer the low growth in open, deciduous woods.

292. Dendroica castanea (*Wils.*). BAY-BREASTED WARBLER.

Description.—Back ashy olive, streaked with black; forehead and sides of head black, inclosing a chestnut crown-patch; throat and sides chestnut, otherwise buffy below. Female more olivaceous, lacking the chestnut on head and throat. Females and fall birds resemble more or less the similar stages of the Black-poll Warbler, but the latter species has the crissum white and not buffy. Extreme measurements of three males from Blantyre: L., 5.46–5.85; W., 2.92–3.07; T., 1.07–2.35.

Range.—Eastern North America, breeding from northern New England northward. Winters in Mexico, Central and South America.

Range in North Carolina.—So far, only known as a rare fall transient at Chapel Hill and a rare spring transient in the southern mountains.

FIG. 233. BAY-BREASTED WARBLER.

We have very few records of the occurrence of this species in North Carolina, it being known to have appeared at only four places: Chapel Hill, Blantyre, Andrews and Raleigh. At Chapel Hill a male was taken on October 2 and another on October 8, 1897, by Pearson. At Blantyre, Sherman and C. S. Brimley secured three males on May 4 and 5, 1908. They also saw a full-plumaged male at Andrews on May 12. The Blantyre and Andrews specimens were found in the tops of small deciduous trees, in company with Black-poll Warblers. The motions of the two species appeared to be very similar. Lastly, a full-plumaged male was seen by Bruner at Raleigh on May 5, 1915.

The female recorded by Cooke as having been reported by H. H. and C. S. Brimley at Raleigh on September 17, 1887, was later identified by Brewster as a Cerulean Warbler.

293. Dendroica striata (*Forst.*). BLACK-POLL WARBLER.

Description: Ad. male.—Crown black; ear-coverts white; nape streaked black and white; back and rump ashy, streaked with black; two white wing-bars; inner vanes of outer tail-feathers with white patches at their tips; underparts white, streaked with black, the streaks most numerous

on the sides, and wanting on the middle of the breast and belly. *Ad. female.*—Upperparts olive-green, distinctly streaked with black; wings and tail as in the male; underparts white, tinged with yellow, the breast and sides distinctly streaked with black. *Ads. fall and im.*—Similar to female, but the upperparts are brighter and not distinctly streaked, the underparts yellower and not distinctly streaked. L., 5.56; W., 2.92; T., 2.05; B. from N., .30.

Remarks.—No two of our warblers more closely resemble each other than do immature and fall examples of this and the preceding species. There is no difference in the color of the upper parts, but *castanea* has the underparts tinged with delicate cream-buff, strongest on the flanks, while *striata* is distinctly yellowish below. (Chap., *Birds of E. N. A.*)

Range.—Eastern and northern North America, breeding in the far north from northern New England northward. Winters in South America.

Range in North Carolina.—Whole State during the migrations.

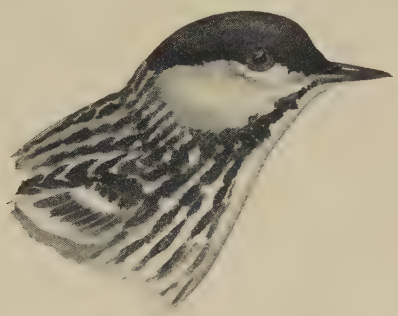


FIG. 234. BLACK-POLL WARBLER.

The Black-poll Warbler, which is about the last of the warblers to migrate, reaches our State near the end of April or early in May. All soon pass on to the north and we have no spring records for them later than May 31 at Raleigh and June 1 at Weaverville. In autumn it appears about the last week in September and leaves late in October, a few sometimes lingering on into the first week of November.

It moves about leisurely, for a warbler, and is often seen in the tops of small trees or in the lowland growth of willows along streams. It appears never to show the restless activity which characterizes such species as the Parula or the Black-and-White Warbler. It seems to be equally common in uplands and lowlands, and has been observed in pine woods, mixed woods, lowland growth, and shade trees.

294. **Dendroica fusca** (*Müll.*). BLACKBURNIAN WARBLER.

Description: Ad. male.—Center of the black crown, a line over the eye, patch behind the black ear-coverts, throat, and breast beautiful, rich orange; back black, streaked with whitish; wing-coverts white, forming a large white patch on the wing; inner vane of most of the tail-feathers almost entirely white, except at the tip; the outer vane of the outer feathers white at the base; belly tinged with orange, sides streaked with black. *Ad. female.*—Resembles the male, but the orange markings are paler, the upperparts are ashy olive-green streaked with black and whitish; the white on the wings and tail is less extensive. *Im. male.*—Resembles the female, but has the orange markings dull yellow, the crown-patch nearly absent. *Im. female.*—Similar to the im. male, but the yellow markings much paler, nearly buffy, the back browner. L., 5.25; W., 2.71; T., 1.96; B. from N., .31.

Remarks.—In connection with other markings, the large amount of white in the tail, appearing on even the outer vane of the outer feather, is characteristic of this species. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding from northern United States northwards, and south along the mountain ranges. Winters mainly in South America.

Range in North Carolina.—Summer visitor in the mountains; transient in the central portion of the State.

The Blackburnian Warbler is known in central North Carolina mainly as a fall transient, at which season it has been observed at Raleigh from September 10 to October 13. At Durham it has been taken by Seeman on May 3 and October 24, 1906, and at Chapel Hill by Pearson on October 16, 1897.

FIG. 235. BLACKBURNIAN WARBLER.

In the mountains it is a common summer visitor, arriving about the middle of April, and leaving the latter part of September. In Buncombe County Cairns has recorded it as breeding at an elevation of about 3,500 feet. Brewster reported it as abundant in late May, 1885, in Jackson and Macon counties, everywhere above 3,000 feet, and as one of the most common birds at Highlands and on the crest of the Cowee Mountain range. Twenty-three years later Sherman and C. S. Brimley passed through the same region in early May and saw only a single bird, although a sharp lookout was maintained. They took a male in full breeding condition about halfway up Joanna Bald Mountain, near Andrews, on May 14, 1908. Bruner has taken this bird at Blowing Rock in summer. Rhoads records it as breeding on Roan Mountain. Feild and Bruner found it common on Grandfather Mountain in June, 1911.

The nest is built in a coniferous tree, often being placed on a horizontal limb. It is bulky, for a warbler's, and is usually a densely woven mass of small twigs, vegetable down, and rootlets, lined with horsehair and feathers. The eggs are usually four, greenish white in color, speckled with brown and gray chiefly around the larger end. Size .69 x .50.

295. **Dendroica dominica dominica** (*Linn.*). YELLOW-THROATED WARBLER.

Description: Ad. male.—A yellow line in front of the eye and a white line over it; upperparts gray, forehead blackish; wings and tail edged with grayish, two white wing-bars; outer tail-feathers with white patches near their tips; cheeks and sides of the throat black; a white patch on the side of the neck; throat and breast yellow, belly white, sides streaked with black. *Ad. female.*—Similar, but with less black on the head, throat, and neck. L., 5.25; W., 2.60; T., 2.01; B., .49. (Chap., *Birds of E. N. A.*)

Range.—South Atlantic States from Maryland southward, wintering in the West Indies, Florida, and along the Atlantic coast locally to South Carolina.

Range in North Carolina.—Whole State in summer, except the higher parts of the mountain region.

The Yellow-throated Warbler reaches North Carolina in spring about the last week in March and has been observed as late as the middle of September. In the

YELLOW-THROATED WARBLER. Dendroica dominica dominica (Linn.) Upper.
PROTHONOTARY WARBLER. Protonotaria citrea (Bodd.) Lower.

mountains Cairns did not record it as arriving until the third week of April, and at Andrews, farther south, Mrs. Wilson's only record of arrival is April 24, 1902, agreeing with Cairns's observations.

At Raleigh it breeds in late April and early May, the nest being frequently built on the horizontal limb of a pine, at a height of from twenty to forty feet from the ground. A nest whose description C. S. Brimley preserved was about three inches in outside diameter, and two inches across inside. In depth it was two and a half inches on the outside and one and a half inches within. It was composed of weed-stems and lined with horsehair. Other nests examined were similar, but the lining varied, being sometimes horsehair and other times feathers or fine grass or a mixture of these. The eggs are usually four in number, and dull greenish or grayish white, spotted with various shades of brown and lavender-gray, almost entirely near the larger ends. Size .65 x .50.

This species is one of our most characteristic summer warblers, being seen mainly in pine woods or swampy places. Pearson has found it abundant in the cypress swamps of the coastal region, where, he states, it frequently nests in the gray moss hanging from the trees. In habits it has something of the creeping ways of the Black-and-White Warbler, but frequents the branches and twigs of trees only, not running about on the trunks. Its song is very distinctive, being loud, ringing, and little like the trilling or buzzing song of the average warbler.

296. Dendroica dominica albilora (*Ridgw.*). Sycamore Warbler.

Description.—Similar to the Yellow-throated Warbler, but slightly smaller, with a relatively shorter bill. Superciliary stripe all white.

Range.—Mississippi Valley, breeding throughout its range; winters in Mexico and Central America.

Range in North Carolina.—So far, only known from the mountain region.

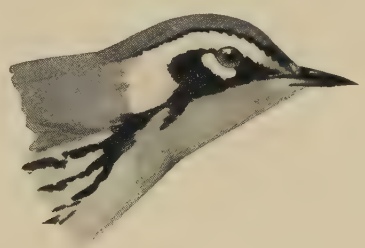


Fig. 236. Sycamore Warbler.

There are three Sycamore Warbler skins in the collection of Brewster at Cambridge, Mass., which were taken by Cairns in Buncombe County on April 18, 1890, and June 5 and 12, 1886, and S. C. Bruner took one at Edgemont, Caldwell County, June 28, 1910.

Besides these, we find Wayne referring warblers seen near Morganton and Lenoir to this form, but we think it more probable that he saw the common eastern Yellow-throated Warblers.

The Sycamore Warbler is merely the western subspecies of the Yellow-throated and its habits are not dissimilar.

Brewster informs us that the three above-mentioned specimens are all that he has obtained from western North Carolina, and that he is still inclined to refer them to this form, in case recognition were given it by the American Ornithologist's Union; and furthermore states that there is only a tendency in the Yellow-throated Warblers from the Mississippi Valley to have whiter lores, shorter bills, and other marks regarded as characteristic of this variety.

297. Dendroica virens (*Gmel.*). BLACK-THROATED GREEN WARBLER.

Description.—Clear yellowish olive; sides of head yellow; whole throat and breast black; rest of underparts white; females and fall birds with the black interrupted or veiled by yellowish. Extreme measurements of 33 specimens from Raleigh and Weaverville: L., 4.85–3.24; W., 2.32–2.65; T., 1.85–2.12.

Range.—Eastern North America, breeding from northern United States northward, and south along the mountain ranges. Winters in Mexico and Central America.

Range in North Carolina.—Whole State, breeding in the mountains and also near the coast; transient in the central portion of the State.

FIG. 237. BLACK-THROATED GREEN WARBLER.

In spring the Black-throated Green Warbler arrives in central North Carolina the last of March, and has been seen in the neighborhood of Raleigh until May 22. In the mountains it appears about April 15 and has been known to remain until October 31, which is about two weeks later than the latest date of its known occurrence at Raleigh.

Bruner and Sherman have found it to be common at Blowing Rock in June and later, and the former also reports it breeding in June, 1909, a little west of Taylorsville. Sherman found it at Hendersonville in the summer of 1907, and he and C. S. Brimley saw and heard it commonly between Toxaway and Highlands on May 8, 1908, in growths of hemlock near the roadside. Rhoads recorded it breeding on Roan Mountain in 1895, and Sherman found it common at Linville in late June, 1909. These localities show that it is pretty well distributed through the mountains in the breeding season, and is not confined by any means to the higher elevations, as the Taylorsville and Hendersonville records attest.

The nests are placed in the forks of horizontal limbs of coniferous trees. These are compact, well woven structures, made of thin strips of bark, twigs, dry grass, wool and feathers, lined with hair and vegetable down. The eggs are usually four, white or buffy, speckled and spotted with brown and gray in indistinct wreaths about the larger end. Size .65 x .50.

YELLOW WARBLER. Dendroica aestiva (Gmel.) Upper.

BLACK-THROATED BLUE WARBLER. Dendroica caerulescens caerulescens (Gmel.) Male and female, lower.

Little is known at this time of the distribution of this species in eastern North Carolina. At Lake Ellis, in Craven County, we have observed it in May of three different years, and in each case up to the last day of our stay, which in 1908 was on May 30. These acted like breeding birds, rather than migrants; but of four males killed only two had fully developed sexual organs. At White Lake, in Bladen County, Sherman and H. H. Brimley found these warblers singing every day of their stay from May 18 to May 22, 1909, and finally Smithwick reports seeing the species feeding young on the banks of the Neuse River near LaGrange, in Lenoir County, in the latter part of June, 1905. The question of its breeding in the eastern part of the State was further settled beyond question in mid-June, 1910, when H. H. Brimley observed one at Lake Ellis carrying food to its young. The bird was seen at the distance of only a few feet, so that there can be no doubt as to its identification.

It may be noted that there is a cool, dense shade in the primeval forests about the lakes in Craven County, which may serve the birds quite as well as more boreal conditions.

298. Dendroica vigorsi vigorsi (*Aud.*). Pine Warbler.

Description.—Yellowish olive above; underparts and superciliary line dull yellow; no sharp markings anywhere; female sometimes much like male, but far more often dull brownish olive above and dirty whitish, little if at all tinged with yellow, below. One of the largest and dullest of the Dendroicas. Extreme measurements of 123 Raleigh specimens: L., 5.25–5.85; W., 2.65–3.12; T., 2.00–2.35.

Range.—Eastern United States, wintering in more southern States.

Range in North Carolina.—Common resident east of the mountains; summer resident in the mountains.

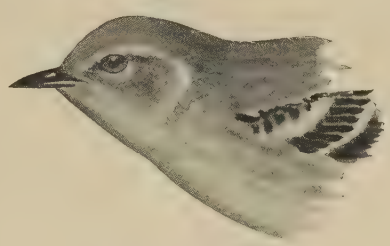


Fig. 238. Pine Warbler.

This is one of our most abundant warblers, being found in the woods of loblolly, short-leaf and long-leaf pines throughout the State. It is only a summer visitor in the mountains, but elsewhere in the State it is a permanent resident. Cairns stated that it arrived in Buncombe County early in February.

The nest is built in early April, frequently on the horizontal limb of a pine, but sometimes among the terminal twigs. Usually it is found at a height of from twenty-five to thirty feet from the ground, although nests have been taken as low as ten and again as high as seventy feet. The structure is generally composed of strips of grapevine bark and weed stems, lined with horsehair and feathers. Often the outside is decorated with cobwebs. The eggs are four, of a grayish white ground color, speckled and spotted with chestnut and lilac, the markings sometimes forming wreaths about the larger end.

Although early April is the usual time for nest building to begin, we have found nests as early as March 20, in 1890, and as late as May 24 in the same year. Mr. Adickes, Assistant Curator of the State Museum, has taken one nest in June. About two weeks time is sufficient to build the nest and deposit a full set of eggs, unless interrupted by unseasonable weather. If the nest is taken, the birds will at once build another, and this will have its full complement of eggs in two weeks from the time the first was destroyed. This action will be repeated several times if the birds are continually disturbed. The nests are comparatively easy to find by watching the birds while the building is in progress.

Although the Pine Warbler is essentially a bird of the pine woods, yet in the fall it is often found in mixed woods in large numbers, and in the winter, when food is scarce, it sometimes collects about dwellings and farmyards and even in open fields.

299. Dendroica palmarum palmarum (*Gmel.*). PALM WARBLER.

Description: Ads.—Crown chestnut; back olive-grayish brown, indistinctly streaked; rump olive-green; no wing-bars; tail black, the outer feathers with white patches on their inner vanes at the tips; a yellow line over the eye; throat and breast bright yellow; belly soiled whitish, tinged with yellow; sides of the throat, the breast, and sides streaked with chestnut-rufous; under tail-coverts yellow. *Ad. in winter and Im.*—Crown-cap partly concealed by brownish tips to the feathers, or sometimes wanting; line over the eye and eye-ring white; underparts soiled whitish, more or less tinged with yellow; breast streaked with dusky. L., 5.25; W., 2.64; T., 2.10; B. from N., .32. (Chap., *Birds of E. N. A.*)

Range.—North America, principally in the Mississippi Valley during the migrations, breeding mainly in British America, and wintering in the West Indies.

Range in North Carolina.—So far, only recorded from the mountains and central part of the State as a spring migrant.

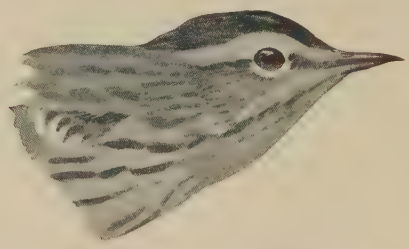


FIG. 239. PALM WARBLER.

A single female taken at Blantyre May 6, 1908, seems referable here, as also does one taken at Raleigh May 1, 1893. Cooke states that migrants recorded by Cairns as late as May 13, in Buncombe County, probably belong here, as this is later in the season than the next form is supposed to appear.

300. Dendroica palmarum hypochrysea (*Ridgw.*). YELLOW PALM WARBLER.

Description: Ads.—Crown chestnut; back brownish olive-green; rump olive-green; no white wing-bars; secondaries sometimes tinged with chestnut; tail edged with olive-green, the outer feathers with white spots on their inner vanes near the tips; line over the eye and eye-ring yellow; underparts entirely bright yellow; sides of the throat, the breast, and sides streaked with chestnut-rufous. *Ad. in winter and Im.*—Crown-cap partly concealed by the brownish tips to the feathers, or sometimes wanting; line over the eye and eye-ring yellowish; entire underparts uniform yellow, washed with ashy; the sides of the throat, the breast, and sides streaked with chestnut-rufous or dusky. L., 5.43; W., 2.61; T., 2.10; B. from N., .31.

Remarks.—In any plumage this bird may be distinguished from the preceding by its uniformly yellow underparts. (Chap., *Birds of E. N. A.*)

Range.—North America, east of the Alleghanies, breeding from New Brunswick and Nova Scotia northward, and wintering in the Gulf and South Atlantic States.

Range in North Carolina.—A transient throughout the State; wintering, at least sparingly, in the east.

FIG. 240. YELLOW PALM WARBLER.

The Yellow Palm Warbler, one of the very few species which regularly and persistently wags the tail, is sometimes a fairly common migrant at Raleigh, the periods at which it is usually most common being about the end of March and the middle or end of April. These migrating birds are usually seen in woods, while the winter birds, which are only of casual occurrence, frequent gardens and open scrubby country. At Weaverville it has been recorded from April 14 to May 13 in spring, and from September 14 to November 28 in the fall. On the coast Pearson has found it in Hyde County in April. Apparently none of these birds pass the winter months in the mountains.

301. Dendroica discolor (*Vieill.*). PRAIRIE WARBLER.

Description.—Upperparts bright olive-green; back spotted with chestnut-rufous; wing-bars yellowish; outer tail-feathers with large white patches at their tips, the outer vane of the outer feather white at the base; a yellow line over the eye; lores and a crescent below the eye black; underparts bright yellow; sides heavily streaked with black. *Ad. female.*—Similar, but with less, or sometimes no chestnut-rufous on the back. *Im. female.*—Upperparts uniformly ashy olive-green; no apparent wing-bars; outer tail-feathers with white on their inner webs at the tips; ear-coverts ashy; underparts yellow; sides indistinctly streaked with blackish. L., 4.75; W., 2.20; T., 1.95; B. from N., .28.

Remarks.—The chestnut-rufous patch in the back at once identifies the adults; but the young females are puzzling birds, to be known chiefly by their small size, absence of wing-bars and streaks on the sides. (Chaps., *Birds of E. N. A.*)

Range.—Eastern United States, breeding from Massachusetts southward; winters in the West Indies and the southern half of Florida.

Range in North Carolina.—Summer visitor throughout the State, east of mountains.

This warbler is a common summer resident throughout the eastern and central portions of the State, but has not been found in the higher mountains. It has been recorded from Taylorsville in Alexander County (Bruner, 1909); Old Fort in McDowell County (Brewster, 1885); and Edgemont, Caldwell County (Feild and Bruner, 1911). It arrives in the State about the middle of April or a little earlier, and has been recorded as late as September 20.

While here it frequents old fields and open woods, particularly where the large trees have been cut away and there exists an abundance of bushes and saplings.

In such places its buzzing song, which somehow to us always seems to suggest hot weather, is almost constantly heard. The nest is a very neat, compact structure of fine grass, plentifully mingled with the gray leaves of wild life-everlasting (rabbit tobacco), which gives it a characteristic gray appearance. The inside is lined with fine grass or horsehair. It is never placed at any great height from the ground, being usually only three or four feet up in a bush or small tree. The species seems to prefer sweet-gum saplings as nesting trees near Raleigh, nine out of seventeen nests examined by C. S. Brimley having been thus situated. Two were in elms, two in huckleberries, and one each was found in pine, sumac, black haw, and *Ilex decidua*. Pearson examined a nest at Cape Hatteras on May 9, 1898, which contained five slightly incubated eggs. It was situated in a holly tree about ten feet from the ground and was composed largely of wool. The eggs have a nearly pure white ground-color, and are speckled and spotted with brown, the markings usually forming wreaths about the larger end. Size .64 x .47. Eggs have been taken at Raleigh from May 12 to June 11, the later dates, however, representing second sets laid by birds whose first nests had been disturbed.

FIG. 241. PRAIRIE WARBLER.

This is one of the smallest of the warblers, and like the two preceding forms, is addicted to the habit of tail-wagging.

With this species we close the list of our North Carolina Wood Warblers; one other species, however, Kirtland's Warbler (*kirtlandi*), will probably be found sooner or later as a migrant. This bird is ashy blue above and yellow below. The back and sides are streaked with black; the chin and crissum are white, the lores black; wing-bars absent. Female duller. Length about 5½ inches. It has been recorded from St. Helena Island, S. C., in the spring and Fort Myer, Va., and Chester, S. C., in the fall (see Cooke *Migration and Distribution of North American Warblers*, pp. 91–92).

Genus Seiurus (Swains.)

The genus *Seiurus* is composed of a few rather large warblers, which are more plainly colored than is usual in this family. Unlike our other warblers, these are essentially ground-loving birds. They walk, instead of hopping like the other species. They are all whitish below, with streaked breasts.

KEY TO SPECIES

1. Crown orange-brown with a black streak on each side. *Oven-bird.*
1. Crown plain brownish like back. See 2.
2. Superciliary stripe buffy; underparts tinged with pale yellow. *Water-Thrush.*
2. Superciliary stripe white; underparts buffy-white, flanks and crissum buff. *Louisiana Water-Thrush.*

302. Seiurus aurocapillus (*Linn.*). Oven-bird.

Description: Ads.—Center of the crown pale rufous or ochraceous-buff, bordered on either side by black lines; rest of the upperparts, wings, and tail brownish olive-green; no wing-bars or tail-patches; underparts white; the sides of the throat, the breast, and sides streaked with black. L., 6.17; W., 3.00; T., 2.15; B. from N., .35. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding from North Carolina northward; winters in Mexico, Central America, and the West Indies.

Range in North Carolina.—Whole State during the migrations, and to a large extent also in summer.

Fig. 242. Oven-bird.

The Oven-bird, also called the Golden-crowned Thrush, is a summer resident in North Carolina. It arrives in April and has been recorded as late as October 23. While here it frequents dense, shady woods, where one may constantly hear its sweet, impulsive song.

In the mountains this is one of the most characteristic and abundant birds of the dense woods, breeding commonly in suitable situations during May and June. The nest is built on the ground, of leaves, grasses and fibers, and is lined with hair and fine grass. In form it is dome-shaped with the entrance on one side. The eggs number four or five, and are white, spotted and speckled with brown and gray, the markings becoming more prominent at the larger end. Size .75 x .57.

Below the mountains the species is reported as breeding at Statesville, Old Richmond (Forsyth County), and Chapel Hill. Besides these localities, Bruner found it breeding rather commonly near Raleigh in 1907 and 1908. Smithwick reports a nest found in Bertie County May 19, 1892; and H. H. Brimley flushed a bird from its nest near Lake Ellis in Craven County in May, 1906.

In fall, when migrating, this species is often excessively fat.

303. Seiurus noveboracensis noveboracensis (*Gmel.*). WATER-THRUSH.

Description: Ads.—Upperparts, wings, and tail uniform olive; no wing-bars or tail-patches; a buffy line over the eye; underparts white, tinged with pale sulphur-yellow (richer in fall), and everywhere (including throat) streaked with black. L., 6.04; W., 2.99; T., 2.11; B. from N., .36. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding from northern United States northward; winters in Mexico, the West Indies, Central America, and northern South America.

Range in North Carolina.—Spring and fall transient throughout the State.

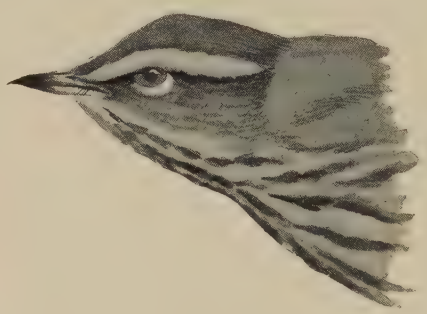


FIG. 243. WATER-THRUSH.

This bird, sometimes called the Small-billed Water-Thrush to distinguish it from the next species, appears to be a rather common spring and fall transient throughout North Carolina. It has been recorded at Raleigh from April 18 to May 28 in spring, and from July 25 to October 1 in autumn. The records we have from other parts of the State all fall within these periods.

The Water-Thrush frequents sluggish streams or shady low-grounds, where it runs about on the bare patches of sand or mud beneath the shadow of the overhanging ferns or shrubbery, uttering at intervals its sharp chirp, and bobbing continually as its walks.

304. Seiurus motacilla (*Vieill.*). LOUISIANA WATER-THRUSH.

Description: Ads.—A conspicuous white line over the eye; upperparts, wings, and tail olive; no wing-bars or tail-patches; underparts white, tinged with cream-buff, especially on the flanks and crissum, and streaked with blackish, except on the throat and middle of the belly. L., 6.28; W., 3.23; T., 2.14; B. from N., .40.

Remarks.—Aside from its larger size, this bird may be known from the preceding species by the whiter, more conspicuous line over the eye, buffy instead of yellowish tinge on the underparts, and absence of spots on the throat. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States, breeding throughout its range; winters in West Indies, Mexico, and Central America.

Range in North Carolina.—Whole State in summer, breeding throughout its range.

The Louisiana Water-Thrush, also known as the Long-billed Water-Thrush, is a summer resident in North Carolina. It arrives during the last half of March, usually in the last week, and we have no record of its remaining later than the end of August.

Fig. 244. Louisiana Water-Thrush.

It is a shy, retiring bird and, except when accompanied by its young, is usually seen singly or in pairs. The nest, which is built in April, is rather bulky, and is constructed among tree roots or other supporting material in the vertical bank of some woodland stream. Usually it is found two or three feet directly above the water and often on the outer curve of a bend. The lower portion of the nest is made of wet leaves, gathered from the water. On a substantial foundation of this material is placed the main structure, consisting of grass and weed stems. The nest, although open above, is frequently concealed from view by overhanging ferns or other vegetation, and so well does it match its surroundings that it usually escapes detection unless the bird is seen to fly from it. The eggs are often five in number, are laid in late April or early May, and have a white, or pinkish-white, ground-color, speckled all over with brown, sometimes with additional gray spottings. Size .78 x .61.

The birds feed in marshy lowgrounds, at times half a mile or more from the nest. The common note is louder and sharper than that of the preceding species, and the song is clear and ringing. This is delivered in a manner which seems to indicate that the bird is in haste to end the performance.

The Louisiana Water-Thrush is found in practically all parts of the State, ranging in the mountains up to 4,000 feet and possibly beyond.

Genus Oporornis (Baird)

Three species have been reported from the State.

KEY TO SPECIES

1. Whole underparts yellow. *Kentucky Warbler.*
1. Chin, throat, and chest not yellow. See 2.
2. Wing 2.62 or more; a continuous white orbital ring. *Connecticut Warbler.*
2. Wing 2.50 or less; no orbital ring. *Mourning Warbler.*

305. Oporornis formosus (*Wils.*). KENTUCKY WARBLER.

Description.—Bright olive-green above; pure yellow below; forehead and sides of head black; a yellow superciliary line curving around eye behind. Measurements of 28 Raleigh specimens: L., 5.25–5.75; W., 2.62–2.87; T., 1.87–2.18.

Range.—Eastern United States, breeding from North Carolina northward; winters in Mexico and Central America.

Range in North Carolina.—Summer resident in the central and western portions of the State.

FIG. 245. KENTUCKY WARBLER.

The Kentucky Warbler is not an uncommon bird in damp, shady woods, and ranges in the mountains up to 4,000 feet elevation. It arrives during the latter half of April and leaves about the end of September, though it has been noted once in mid-October. The nest is built on the ground, in woods, and is composed of dead leaves, lined with grass, rootlets, and pine straw. The eggs, which are laid in May or June, have a white ground-color, and are spotted and speckled with brown and lilac-gray, chiefly at the larger end. Size .73 x .57.

This is a handsome species, with a loud song somewhat resembling that of the Carolina Wren. Being very shy, it is, however, more often heard than seen.

306. Oporornis agilis (*Wils.*). CONNECTICUT WARBLER.

Description.—Olive-green, ashy on head; throat and breast brownish ashy; otherwise yellow below; a continuous white orbital ring. L., 5.40; W., 2.90; T., 1.90; B. from N., .32.

Range.—Eastern North America, breeding chiefly or entirely north of the United States; winter home not yet known.

Range in North Carolina.—So far, only known as a migrant at Raleigh and Highlands.

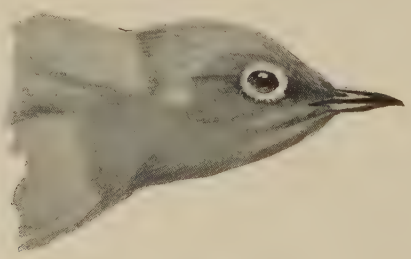


FIG. 246. CONNECTICUT WARBLER.

The Connecticut Warbler has been taken in the State but twice. Once was at Raleigh, on October 15, 1884—where it has also been seen on October 15 and 24, 1896, and on October 13, 1898.

A specimen in the flesh was received at the State Museum May 27, 1910, from Miss M. E. Huger of Highlands. The bird had been caught by a cat a day or two previously.

"During the spring migration the Connecticut Warbler seems to be confined to the Mississippi Valley, where, at this season, as well as in the fall, it is generally considered a rare bird. In its return migration, however, it is often common in the Atlantic States. At this time they may usually be found in low, damp woods with abundant undergrowth, though not infrequeytly they are flushed from weedy growths bordering hedgerows some distance from the woods. Then are now excessively fat, no other warbler, as far as I am aware, approaching them in this respect. While, locally, Connecticut Warblers seem to come in flights, being common some years and rare others, the census of lighthouse-striking warblers shows that the bird is a regular autumnal visitor.

"According to Ernest Seton, who alone has found the Connecticut breeding, the bird, in Manitoba, summers in tamarac swamps. Gault's observations in Aitkin County, Minn., indicate the breeding of the species in similar localities at that place, while the taking of fledglings by Warren, on August 10, near Palmer, in the Upper Peninsula of Michigan, considerably extends the probable nesting range of the species. Warren remarks that at this point he saw over fifty Connecticut Warblers on August 29, an observation which suggests that the species is much more common in the Mississippi Valley than existing records would lead us to believe." (Chapman's *The Warblers of North America.*)

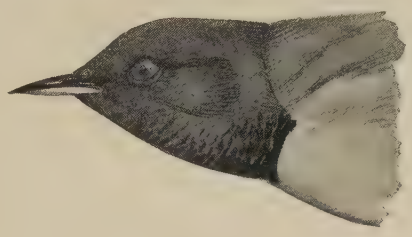


Fig. 247. Mourning Warbler.

307. Oporornis philadelphia (*Wils.*). Mourning Warbler.

The Mourning Warbler, is bright olive-green, clear yellow below; head ashy; throat and breast mixed ash-gray and black. Female and fall birds like the corresponding stage of the preceding; that is, with the throat whitish or buffy and the breast brownish gray, but distinguished by the shorter wing and the absence of an orbital ring. L., 5.63; W., 2.56; T., 2.13; B. from N., .32.

Mrs. Donald Wilson, of Andrews, Cherokee County, reports having seen full-plumaged specimens of this species at Andrews. As it is known to breed in the mountains of Pennsylvania and West Virginia, it is of course possible that more complete and thorough observations may show that it breeds also in the mountains of North Carolina.

Genus Geothlypis (Cab.)

308. Geothlypis trichas trichas (*Linn.*). Maryland Yellow-throat.

Description.—Olive-green above; forehead and broad mask extending down sides of head and neck, jet black; breast and under tail-coverts yellow. Extreme measurements of 88 Raleigh specimens: L., 4.60–5.30; W., 1.87–2.37; T., 1.68–2.25.

Range.—Eastern North America, wintering in South Atlantic and Gulf States and southward.

Range in North Carolina.—Whole State in summer; occasionally seen in winter in the east.

The Maryland Yellow-throat, which is probably known by sight to more of our people than any other small warbler, arrives in central North Carolina about the

last week in March, and perhaps a week later in the mountains. It remains all summer, finally leaving in October, though occasional specimens have been observed in winter at Durham, Raleigh, and farther east. Ludlow Griscom found it not uncommon in Currituck County in January, 1915.

This is a rather trustful little bird, frequenting thickets everywhere, especially along streams, and if unmolested will often come to the edge of the thickets or bushes to peer inquisitively at the passer-by.

FIG. 248. MARYLAND YELLOW-THROAT.

The nest is constructed of grass or reed leaves, and is usually built in a bunch of grass, clover, or weeds, only a few inches from the ground. The eggs are most often four, laid in May or June, and have a white ground-color, spotted near the larger end with various shades of gray and brown. Size .70 x .52.

Apparently, the form occurring throughout our State is the typical Maryland Yellow-throat, but another slightly differing subspecies is probably found in the coastal country. This is the Florida Yellow-throat, *ignota* (Chapman), which is said to have the tail longer than the wings, the black of the head slightly more extensive, and the yellow of the underparts more ochraceous; but these differences are not readily detected in the field.

Genus Icteria (Vieill.)

309. Icteria virens virens (*Linn.*). YELLOW-BREASTED CHAT.

Description: Ads.—Largest of the warblers; upperparts, wings, and tail olive-green; line from the eye to the bill, one on the side of the throat, and eye-ring white; throat, breast, and upper belly bright yellow; lower belly white; sides grayish. L., 7.44; W., 3.00; T., 3.07; B. from N., .41. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States, wintering in Mexico and Central America.

Range in North Carolina.—Central and western portions in summer.

The Chat, also locally called "Pompey," is an abundant summer visitor in central and western North Carolina, occurring almost everywhere in sunny thickets and among low second-growth trees. It arrives about the close of the third week

in April, and has been noted as late as September 13 at Raleigh, and October 1 at Asheville. It appears to be absent from the eastern border of the State.

The Chat is a noisy, though shy bird, and is also one of the few species that sing at night as well as in the daytime. When singing, it frequently flies upward with flapping wings and jerking tail, finally finishing its performance by a quick dive into a neighboring thicket.

Fig. 249. Yellow-breasted Chat.

The eggs are three or four in number, laid in May and June. These are pure white with a glossy surface, marked with specks and spots of some shade of brown. Size .92 x .71. The nest is placed among briars or in a small bush at a height of one to five feet from the ground, and is constructed of grass or of weed stems, lined with fine grass or roots.

Genus Wilsonia (Bonap.)

KEY TO SPECIES.

1. Tail-feathers blotched with white. *Hooded Warbler.*
1. Tail-feathers unblotched. See 2.
2. Underparts yellow without streaks. *Wilson's Warbler.*
2. Underparts yellow with a chain of black streaks across breast. *Canada Warbler.*

310. Wilsonia citrina (*Bodd.*). Hooded Warbler.

Description.—Bright yellow olive, bright yellow below. Male with breast, crown, and neck all around jet black, inclosing a broad yellow mask; female with the black reduced or absent. Extreme measurements of 74 specimens from Bertie and Wake counties: L., 5.25–5.85; W., 2.30–2.75; T., 2.20–2.50.

Range.—Eastern United States, wintering in West Indies, Mexico, and Central America.

Range in North Carolina.—Whole State in summer.

The Hooded Warbler arrives in North Carolina about the middle of April, and appears to leave late in September. While here it frequents shady woods, but is most abundant in the low woodlands of the eastern part of the State, where it seems to breed chiefly in reed thickets.

The nest is usually built at a height of two to four feet from the ground, in the top of a cluster of reeds or in a low bush, and is composed of reed-leaves, bark strips, pine needles, and similar materials, lined with fine grass and roots. The eggs are three or four in number, laid in May or occasionally in June, and have a white ground-color, spotted and speckled, chiefly near the larger end, with brown and gray. Size .70 x .55.

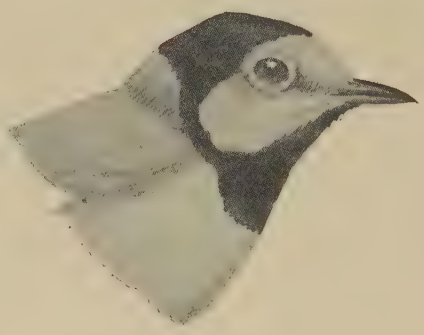


FIG. 250. HOODED WARBLER.

The Hooded Warbler is another species that habitually wags its tail, and it also has a habit, shared by some other warblers, as the Redstart and Magnolia Warbler, of opening and shutting the tail, which alternately exhibits and hides the white blotches on the outer tail-feathers.

In common with the other members of the genus, it has the bill broad and depressed at the base, and this character, added to the fact that it is provided with bristles at the gape, gives force to the name "Fly-catching Warbler," by which it is sometimes called.

311. Wilsonia pusilla pusilla (*Wils.*). WILSON'S WARBLER; WILSON'S BLACKCAP.

Description.—Clear yellow olive, forehead, sides of head, and whole underparts bright yellow; crown black in adult male, the black usually less distinct or even absent in female and young birds; no wing-bars. Extreme measurements of 4 males from Raleigh: L., 4.75–5.00; W., 2.20–2.25; T., 1.95–2.08.

Range.—Eastern North America, breeding from northern United States northward; winters in Mexico and Central America.

Range in North Carolina.—A rare transient visitor between Raleigh and the mountains.

Our only records of this species are Raleigh, May 17, 1880; May 13, 1882; May 11, 16, 1893 (H. H. and C. S. Brimley); May 19, 1915 (S. C. Bruner); Durham, April 14, 1903 (Seeman); Weaverville, May 8, 1890; May 7, 1884; and September 22 and 25, 1894 (Cairns).

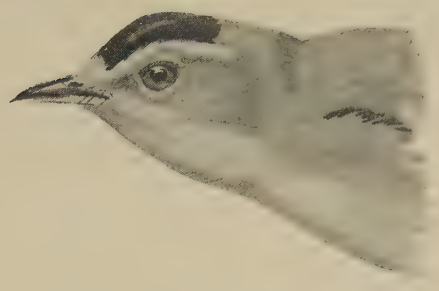


Fig. 251. Wilson's Warbler.

312. Wilsonia canadensis (*Linn.*). Canada Warbler.

Description: Ad. male.—Upperparts, wings, and tail gray; no wing-bars or tail-patches; crown spotted with black; line from the bill to the eye and underparts yellow; sides of the neck black; a necklace of black spots across the breast; under tail-coverts white; bill with bristles at its base. *Ad. female and im. male.*—Similar, but with no black on the head or sides of the throat; necklace indicated by dusky spots. *Im. female.*—Similar, but with breast spots fainter or wanting. L., 5.61; W., 2.53; T., 2.23; B. from N., .31. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, wintering from Mexico to South America.

Range in North Carolina.—Breeds in portions of the mountain region, and once found at Raleigh in spring.

A Canada Warbler was taken by H. H. Brimley at Raleigh, May 13, 1892, and Bruner saw one at the same place on May 18, 1912; but all our other records are for the mountain region. Boynton records it as tolerably common and breeding at Highlands in Macon County; and Cairns said it was common on Craggy Mountain up to 6,000 feet. Bruner found it at Blowing Rock on August 2 and September 16, 1907; Rhoads discovered it breeding on Roan Mountain in June, 1895, from 3,000 to 4,000 feet elevation. Pearson reported it at Asheville July 20, 1902. In the summer of 1911 Bruner and Feild observed the species on Roan Mountain, Grandfather Mountain and six miles southeast of Linville, the last named place being at an elevation of 3,750 feet. The earliest date for the State is April 29, 1886, at Highlands, and the latest October 10 at Weaverville.

The nest is placed on the ground in underbrush, in such situations as the side of a log or at the foot of a bush, and is composed of dry weeds and fine roots with a lining of hair. The eggs are four or five, white or buffy, speckled or spotted with brown and gray, chiefly round the larger end. Size .68 x .51.

Genus Setophaga (Swains.)

313. Setophaga ruticilla (*Linn.*). Redstart.

Description.—Male black, the sides of breast and large blotches on wings and tail orange red; belly white; female olive, marked with yellow instead of red; young males like female, but with more or less traces of black. Extreme measurements of 97 Raleigh specimens: L., 4.95–5.50; W., 2.25–2.65; T., 2.08–3.35.

Range.—Eastern North America, wintering in Mexico, Central and South America.

Range in North Carolina.—Summer visitor in central portion and in mountain valleys, transient only in the eastern section.

The Redstart, though apparently not found in summer in the east, is a common summer visitor in central North Carolina, arriving from the south early in April

and leaving early in October. It frequents wooded streams particularly, and often builds its nest in birches and other lowland growth. The eggs are four, usually laid about the middle of May, and are white in ground-color, speckled and spotted with various shades of brown and gray, chiefly around the larger end. Size .63 x .48. The nest is a compact, cup-shaped structure, made of shreds of plants and fibers held together with spiders' webs and lined with fine grass and hair. The nest may be placed in a fork, or saddled on a horizontal limb, at a height of five to forty feet from the ground.

The male Redstart almost invariably spreads his tail when flying, and thus exhibits the conspicuous orange patches which it bears.

At Raleigh many of the breeding males are found to be in immature plumage with little or no black, which fact is said to be an indication of the species being near the limit of its breeding range.

52. FAMILY MOTACILLIDÆ. WAGTAILS AND PIPITS

Genus Anthus (Bechst.)

314. Anthus rubescens (*Tunst.*). PIPIT.

Description: Ads. in winter.—Outer tail-feather largely white, next one or two white-tipped. Above warm grayish brown; wing-coverts tipped with whitish or buffy; longest tertial longer than fifth primary; a whitish or buffy line over eye; below buffy (whitish just before spring molt), breast and sides streaked with fuscous; hind toe-nail longest, as long as or longer than its toe. After spring molt upperparts grayer, underparts more pinkish buff; but these colors fade as breeding season advances. L., 6.38; W., 3.50; T., 2.69; B., .47. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding far northward and in the higher Rocky Mountains.

Range in North Carolina.—Whole State in winter.

FIG. 252. PIPIT.

The Pipit or Titlark, locally called "Skylark," is an irregular winter visitor in eastern and central North Carolina from the latter part of October to about the end of March. While here it travels in large flocks, frequenting open fields, where the surface of the ground is comparatively bare. Its gait is a walk, not a hop, and it wags its tail continually as it moves.

In the mountain region it would appear to be a transient rather than a winter visitor, as Cairns records it from Buncombe County only in spring and fall, and at Andrews it has been noted from October 29 to December 15 in autumn, and February 21 to March 22 in spring.

CANADA WARBLER. Wilsonia canadensis (Linn.) Upper.

REDSTART. Setophaga ruticilla (Linn.) Male and female, lower.

53. FAMILY MIMIDÆ. THRASHERS AND MOCKINGBIRDS

An exclusively American group of birds, apparently allied to the wrens on the one hand and the thrushes on the other. The species are all medium-sized birds with comparatively short wings and long tails. None are brightly colored. They compensate for this, however, by the possession of unusually fine voices, the mockingbirds being among the most accomplished musical artists in the bird-world.

KEY TO GENERA

1. Wings and tail blotched with white. *Mimus.*
1. Wings and tail without white. See 2.
2. General color dark slate. *Dumetella.*
2. General color above cinnamon brown. *Toxostoma.*

Genus Mimus (Boie)

315. Mimus polyglottos polyglottos (*Linn.*). MOCKINGBIRD.

Description.—Upperparts plain gray; underparts soiled white; wings and tail blackish, with a large patch on the wings and the tips of the tail-feathers white. Extreme measurements of 55 Raleigh specimens: L., 9.12–10.50; W., 3.85–4.60; T., 4.14–5.12.
Range.—Southeastern United States.
Range in North Carolina.—Resident in central and eastern portions, and occasional in the mountains.

The Mockingbird is resident throughout the year in that portion of the State lying east of the mountains, becoming more abundant as one approaches the coast.

It breeds from April to early July, inclusive, building its nest in almost any convenient tree. The situations of two dozen nests of which we have records were as follows: seven in mulberry trees, four in apple trees, three in cedars, two in briars, one in a pine, one in a honeysuckle-vine, one in a plum tree covered with honeysuckle, one in an oak, one in a rosebush, one in a thorn-bush, one in a sweet-gum, and one in a grapevine. The eggs number from three to five. They are pale greenish-blue, varying to a dull buffy in ground-color, marked with spots and blotches of various shades of brown. Size .95 x .70.

The nests are constructed of sticks, moss, grass, rootlets, rags, "rabbit tobacco," scraps of newspaper, and other available material, making a rather bulky and untidy structure. It is usually built at a height of from four to twelve feet from the ground.

The Mockingbird is the most masterly song bird of America. In addition to its own song, it possesses the wonderful power of imitating the notes of other birds. We have heard it reproduce the notes of the Brown-headed Nuthatch to perfection, and have been misled by its copy of the Killdeer's cry. One bad feature it has is keeping too late hours, as it will frequently render its best musical performances close by one's open window on a hot summer night, when one's chief need is sleep. Most of us, however, are quite ready to forgive it for these disturbances.

It is very pugnacious when its nest is approached, and will fearlessly drive dogs and cats from its neighborhood.

While preëminently an insectivorous bird, like most of the larger insect-eaters, it also consumes many berries, such as frostgrapes in winter and mulberries in

summer, and occasionally makes itself somewhat of a nuisance in the strawberry patch or the vineyard. The Mockingbird's good habits, nevertheless, far outweigh any evil it may do, and it is well worthy of the protection it receives in the State by law and by the the still stronger safeguard of public opinion.

FIG. 253. MOCKINGBIRD.

Genus Dumetella (S. D. W.)

316. Dumetella carolinensis (*Linn.*). CATBIRD.

Description.—Dark slaty gray; crown and tail black; under tail-coverts chestnut. Extreme measurements of 10 Raleigh specimens: L., 8.35–9.12; W., 3.35–3.75; T., 3.50–4.08.
Range.—Eastern North America, wintering in the southern United States and southward.
Range in North Carolina.—Whole State in summer, wintering in the eastern section.

The Catbird arrives in the central and western portions of this State about the close of the third week in April, and leaves us late in October. At Raleigh it has been observed by H. H. and C. S. Brimley four times in winter during twenty-six years of observation. We have no winter records of it farther west. In the east Dr. Smithwick says he has observed it in mild winters in Beaufort and Bertie counties, but does not think it always remains. Sherman saw a number near Lake

Mattamuskeet in January, 1910, and Pearson has found it common in winter on the coast at various points from Beaufort southward.

This bird is one of our most abundant and familiar species in the summer. Thickets along streams, orchards, and low shrubbery seem to delight the Catbird, and in such places it builds its nest in briars, vines, or trees. Rarely the nest is placed in trees fifty or sixty feet from the ground (Pearson and Bruner). The nest is constructed of weed stems, grass, leaves, small twigs, and similar materials. In it are laid some time in the months of May, June, and July three or four deep bluish-green, unmarked eggs. Size .95 x .71.

Fig. 254. Catbird.

The Catbird is quite an agreeable singer, although frequently mingling with his song unmusical mews and other disagreeable notes. The name is derived from its cat-like calls, and so exact are these imitations in some individuals that C. S. Brimley has seen kittens misled by them.

The food of the Catbird consists of insects and soft fruits, and it is sometimes a pest in one's strawberry patch. C. S. Brimley states that on two or three occasions he has found a Cardinal's nest containing freshly broken eggs, which he had strong reasons to believe were attributable to a Catbird's depredations.

Genus Toxostoma (Wagl.)

317. Toxostoma rufum (*Linn.*). Brown Thrasher.

Description.—Upperparts, wings, and tail rufous; wing-coverts tipped with whitish; underparts white (buffy in fall), heavily streaked with black or cinnamon, except on throat and middle of belly. L., 11.42; W., 4.06; T., 5.03; B., .96. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, wintering in southern United States.

Range in North Carolina.—Whole State in summer, wintering regularly in the eastern section, and irregularly in the central portion.

The Thrasher, "Brown Thrush," or "Rusty Mockingbird," is a common summer resident throughout North Carolina, reaching us from the south about the end of March or the beginning of April, and usually departing in October. In most parts of the State a few appear to pass the winter. Pearson found one at Chapel Hill, Orange County, on January 2, 1899, and in the eastern section it is resident the entire year.

It is a shy, retiring bird, with a fine voice, but is so unobtrusive in its habits that the song is often credited by the uninformed to its cousin, the Mockingbird.

The nest is built in thick cover usually near the ground; once we found one on the third rail from the top of an old worm-fence. It is constructed of twigs, weed stems, and dead leaves, and is usually lined with roots. The eggs are laid from late April to early July, and are three or four in number. They have a whitish, pale buff, or pale greenish ground-color, thickly speckled all over with minute specks of reddish brown. Size 1.08 x .80.

FIG. 255. BROWN THRASHER.

One curious habit of this bird is to scratch or rake among dead leaves with its bill, which it uses effectively, tossing the leaves about in merry mood while searching for insects.

54. FAMILY TROGLODYTIDÆ. WRENS

This is a family of small birds, with plain color and nervous activity. Some of them show a strong liking for the vicinity of human habitations, while others prefer to dwell in dense woods or swamps.

KEY TO GENERA

1. Back without streaks. See 2.
1. Back streaked with black and white. Marsh Wrens. See 5.
2. No distinct superciliary stripe See 3.
2. A distinct white superciliary stripe. See 4.
3. Tail more than three-fourths length of wing. *Troglodytes.*
3. Tail very short, less than three-fourths length of wing. *Nannus.*
4. Tail-feathers all brown, barred with darker. *Thryothorus.*
4. Tail-feathers mostly black, tipped with whitish. *Thryomanes.*
5. A white superciliary line. *Telmatodytes.*
5. No white superciliary line. *Cistothorus.*

Except *Telmatodytes*, which has two and possibly three representatives in the State, none of these genera is represented in eastern North America by more than a single species.

Genus Thryothorus (Vieill.)

318. Thryothorus ludovicianus ludovicianus (*Lath.*). CAROLINA WREN.

Description.—Above *bright rufous* or *rufous-brown* without bars or streaks; feathers of rump with concealed downy white spots; a long, conspicuous whitish or buffy line over eye; wings and tail rufous-brown, finely barred with black; underparts ochraceous-buff or cream-buff, whiter on the throat; flanks sometimes with a few blackish bars. Worn breeding plumage is dingier above and whiter below. The largest of our wrens. L., 5.50; W., 2.30; T., 2.00; B., .60. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States.

Range in North Carolina.—The whole State at all seasons of the year.

FIG. 256. CAROLINA WREN.

The Carolina Wren is one of our best known birds at all seasons in all parts of the State. Ever restless, and constantly shifting its position while being observed, it is a bird of decidedly striking personality. It is found along streams, in shady woodlands, and in the neighborhood of houses, where it is the common "House Wren" of the State, excepts in parts of the mountain region, where it shares that distinction with the Bewick's Wren. It is the largest of the North Carolina wrens.

The nest is built in a bank or in almost any convenient nook about buildings. Pearson has found them situated in the pocket of an old overcoat left hanging on

a back veranda, in a tin wash-basin on the mantel of a negro's deserted cabin, in a broken gourd carelessly tossed on a grape-arbor, and in a cap hanging against the latticed wall of an outhouse. The nest may be placed also in holes in banks along roads, among the tangled roots of upturned trees, and under brush-piles. It is a bulky affair, composed of grass, dead leaves, moss, cotton, rootlets, or any other convenient and desirable material. Sometimes it is partly domed over. Laying usually begins in early April, and from four to six egg' are deposited. These are whitish in color, thickly sprinkled with brownish spots all over. Size .72 x .56. Apparently this wren regularly raises two broods.

The song is loud and ringing and is kept up throughout the whole year, which, so far as we are aware, is not the case with any other of our birds. Its notes are translated by some of our people into the words, "*jo-reeper, jo-reeper, jo-ree,*" while others translate the song into the words "*freedom, freedom, freedom.*" Sometimes it is called the "Mocking Wren." All winter long, no matter how deep the snow, you may hear the singing of this wren, especially on bright, clear days.

This wren has no undesirable qualities, and is eminently deserving of the fullest protection. Probably domestic cats are its worst enemies.

Genus Thryomanes (Scl.)

319. Thryomanes bewicki bewicki (*Aud.*). BEWICK'S WREN.

Description.—Above dark *cinnamon-brown without* bars or streaks; feathers of rump with concealed, downy, white spots; outer vane of primaries little if at all barred; central tail-feathers grayish-brown, barred, at least on sides, with black; outer ones black, tipped with grayish; the outer one or two with more or less bars on the outer vane; a white or buffy line over eye; underparts grayish white; flanks brownish. L., 5.00; W., 2.30; T., 2.10; B., .50. (Chap., *Birds of E. N. A.*)

Range.—Eastern United States, mainly west of the Alleghanies.

Range in North Carolina.—Summer visitor in the mountain region; winter visitor in the central region.

This wren is known to be a common summer visitor in the mountains, arriving there about the end of March. Elsewhere in the State it has been recorded only from Statesville and Raleigh. At the latter place it is a rare but regular winter visitor, confining itself almost entirely within the city limits, and has been observed as early as September 24 and as late as April 3.

In the mountains it is far more common, being apparently confined to the neighborhood of human habitations, particularly in the small towns of that region. The localities from which we have records are Andrews, Blantyre, Blowing Rock, Asheville, Weaverville, Morganton, Highlands, and Sunburst, Haywood County.

The nest is similar to that of the Carolina Wren, and is built in as great a variety of situations. The eggs also resemble those of that species, but are smaller, averaging in size about .64 x .49, and are also less heavily colored. According to Cairns, it nests in Buncombe County in early April, and C. S. Brimley found a nest containing young birds at Blantyre in early May, 1908.

This species is most easily recognized by its small size and long black tail. It is a very fine singer, the notes at times somewhat suggesting those of the Song Sparrow, but they are more musical.

Fig. 257. Bewick's Wren.

Genus Troglodytes (Vieill.)

320. Troglodytes ædon ædon (*Vieill.*). House Wren.

Description.—Above cinnamon olive-brown, *more rufous on the rump and tail*; back generally with indistinct bars; feathers of the rump with concealed, downy white spots; wings and tail finely barred; below *grayish white*, flanks rusty, sides and flanks usually, breast rarely, under tail-coverts always barred with blackish. L., 5.00; W., 1.97; T., 1.71; B., .50. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, nesting from Virginia northward; wintering in Southern States.

Range in North Carolina.—Spring and fall transient only.

The House Wren of the North is known in our State only as a rare transient, having been noted from April 11 to May 4 in spring, and from September 24 to October 16 in fall (1885–1908). So far, it has been recorded only from Hyde, Wake, Orange, and Buncombe counties.

The nesting habits are said to be similar to those of the two preceding species. It may reasonably be expected to breed in portions of the mountain region, but no one has yet recorded it from any part of the State in summer. Like most of the family, it is a pleasing songster.

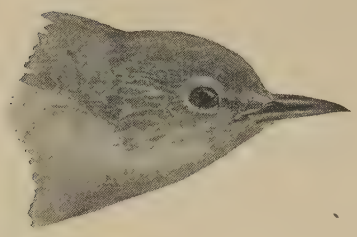


FIG. 258. HOUSE WREN.

Genus Nannus (Billb.)

321. Nannus hiemalis hiemalis (*Vieill.*). WINTER WREN.

Description.—Deep reddish brown, waved with dusky; wings, tail, and belly posteriorly, barred with darker. L., 3.75–4.20; W., 1.65–2.00; T., 1.00–1.30.

Range.—Eastern North America, breeding from the northern United States northward, and in the higher mountains. Winters in the greater part of the eastern States.

Range in North Carolina.—Winter visitor throughout the State. Breeds on some of our highest mountains.

FIG. 259. WINTER WREN.

This species, easily known from our other wrens by its dark color, small size, and ridiculously short tail, arrives late in September or early in October, and does not leave until late in April. On some of the higher mountains, however, it remains throughout the summer. Thus, Cairns records it as breeding on Black Mountain; Rhoads found it in June, 1895, in the fir belt of Roan Mountain; Sherman heard one singing on Grandfather Mountain at 5,000 feet elevation in late June, 1909; and, finally, Pearson heard two singing on Mount Mitchell on August 8, 1903, at an elevation of 6,500 feet.

The nest is placed in the hollows of low stumps in damp situations, or in tangled piles of fallen trees and limbs. It is constructed of small twigs, interwoven with

moss and dead leaves, and warmly lined with feathers. The eggs average about .69 x .49, and are clear white, spotted with reddish-brown and purple, chiefly near the larger end.

The Winter Wren is common along wooded streams and in shady woods, occasionally even venturing into our yards and gardens. It is an exceedingly alert little bird, with its stumpy tail usually seen sticking up at right angles to its back. As it hops rapidly along a fence rail or through a brush-pile, it may almost be mistaken for a hurrying mouse. The song is exceedingly sweet.

Genus Cistothorus (Cab.)

322. Cistothorus stellaris (*Naum.*). Short-billed Marsh Wren.

Description.—Entire upperparts *streaked* with white, black, and ochraceous-buff, wings and tail barred; underparts *unbarred*, white; under tail-coverts, flanks, and a more or less broken band across breast ochraceous-buff. L., 4.00; W., 1.75; T., 1.41. (Chap., *Birds of E. N. A.*)
Range.—Eastern United States, wintering in Gulf States.
Range in North Carolina.—So far, only known as a rare transient.

Fig. 260. Short-billed Marsh Wren.

Our only records for this little Marsh Wren in North Carolina are as follows: Raleigh, May 4, 1894; August 10, 1894; September 20, 1893 (H. H. and C. S. Brimley); Fort Macon, one taken October 1, 1869 (Coues); Weaverville, October 14 to 22, 1890 (Cairns); Pungo Bluff, Hyde County, a few seen by Maynard, November 13, 1876; Juniper Bay, Hyde County, common on November 15 and 16, 1876 (Maynard). (The last two records are taken from Smithwick's *Catalogue of the Birds of North Carolina.*)

Genus Telmatodytes (Cab.)

Two subspecies of the Long-billed Marsh Wrens occur in North Carolina, while another may also reach our southern border, as it occurs in South Carolina.

KEY TO SPECIES AND SUBSPECIES

1. White of lower parts usually continuous from chin to under tail-coverts. *Long-billed Marsh Wren.*
1. White of lower parts usually interrupted by a band of dusky grayish or reddish spots, or clouding, across breast. See 2.
2. Black of upperparts usually deeper and more extended, frequently covering the entire crown, nape and most of the back. *Marian's Marsh Wren.*
2. Black of upperparts much duller and less extended, usually confined to the sides of the crown, and a short narrow area in the middle of the back. *Worthington's Marsh Wren.*

323. Telmatodytes palustris palustris (*Wils.*). LONG-BILLED MARSH WREN.

Description.—Crown unstreaked, its sides black, its center olive-brown, a white line over eye; middle of back black, broadly streaked with white; rest of back cinnamon-brown; middle tail-feathers narrowly, outer tail-feathers broadly barred; below white, the sides and flanks pale cinnamon-brown sometimes extending to breast; under tail-coverts rarely barred. Specimens in worn breeding plumage are grayer. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, wintering in Gulf States.

Range in North Carolina.—Transient in the central and western portions; winter visitor along the coast.

FIG. 261. LONG-BILLED MARSH WREN.

At Raleigh this species has been observed from April 21 to May 7 in spring, and from September 20 to October 19 in autumn, and also on January 14 and 30, 1890; March 17, 1888; and March 13 and 18, 1889; while in the mountains at Weaverville our dates are in fall only, viz., from September 22 to October 31 (Cairns). On the coast Bishop has noticed that a few pass the winter on Pea and Bodie islands.

This is distinctly a marsh-bird. At Raleigh the species is sometimes quite common in the spring migrations, and occasionally also in the fall. Coues called it abundant during migrations at Fort Macon, in the early seventies, and states that no nests were observed. Only one form of the Long-billed Marsh Wren was then recognized, so we cannot be certain to what variety his notes refer.

The nests are globular and about the size of a cocoanut. The opening is on the side, and the nests are built among bunches of reeds, rushes, or cattails, the birds constructing many more nests than they actually use. The eggs are very dark, being so thickly marked with brown as to appear of a uniform chocolate color. Size .65 x .55.

Worthington's Marsh Wren, *Telmatodytes palustris griseus* (Brewst.), is a subspecies of the Long-billed Marsh Wren, being much paler, with the black of the upperparts and the white of the lower parts more restricted. The brown of the flanks and sides is pale and grayish. This form breeds on the coast of Georgia and South Carolina, and perhaps occurs also in North Carolina.

324. Telmatodytes palustris marianæ (*Scott*). MARIAN'S MARSH WREN.

Description.—Similar to *palustris*, but smaller, with the upperparts darker, the sides and flanks more heavily washed and of about the same color as rump; the under tail-coverts, and sometimes sides and breast barred or spotted with black. W., 1.80; T., 1.50; B., .52.

Remarks.—The amount of black above is variable and the general tone of color in some specimens closely approaches that of *palustris*, from which, however, the heavily barred under tail-coverts separate this race. (Chap., *Birds of E. N. A.*)

Range.—Portions of the South Atlantic and Gulf Coast of the United States.

Range in North Carolina.—Part or all of the salt-marshes of the coast.

Marian's Marsh Wren has been reported from Pea and Bodie islands, where Bishop records it as a resident, breeding in late May and June. Pearson took two specimens on Gull Shoal Island in Pamlico Sound, May 28, 1898, and found the species abundant and nesting there; he took another at Old Topsail Inlet, August 2, 1898. He heard marsh wrens singing near Southport on June 9, 1898, and found a nest of three eggs, but the birds were not identified.

The nesting habits are similar to the preceding species.

55. FAMILY CERTHIIDÆ. CREEPERS

A family of small arboreal birds, mainly belonging to the Old World. One genus is represented in North America by a single species.

Genus Certhia (Linn.)

Contains species with slender decurved bill, and with the tail-feathers acute and stiffened somewhat like those of a woodpecker. The single American species is represented by several subspecies, one of which occurs with us.

325. Certhia familiaris americana (*Bonap.*). BROWN CREEPER.

Description: Ads.—Upperparts mixed with white, fuscous, and ochraceous-buff; rump pale rufous; tail pale grayish brown; a band of cream-buff through all but outer wing-feathers; bill curved; tail-feathers stiffened and sharply pointed; underparts white. L., 5.66; W., 2.56; T., 2.65; B., .63. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding mainly north of the United States.

Range in North Carolina.—Whole State in winter, and breeds on the higher mountains.

Except on the highest mountains, the Brown Creeper is only a winter visitor in North Carolina, arriving early in October and leaving about the middle of April. In parts of the mountain region it resides throughout the year, breeding on the higher ranges and wintering in the valleys. Rhoads observed it on Roan Mountain in June, 1895; Brewster on Black Mountain and near Highlands in late May, 1884; and Feild and Bruner saw young birds on Grandfather Mountain June 24, 1911. It was also seen by C. S. Brimley at Double Spring Gap, Haywood County, May 25, 1913.

FIG. 262. BROWN CREEPER.

According to Cairns, they nest in Buncombe County in May, selecting knot-holes and natural cavities of trees for the purpose. Five or six eggs are laid. LeMoyne found a nest May 15, 1886, behind the loose bark in the dead top of a spruce in the Great Smoky Mountains, just across the Tennessee border from North Carolina.

It was composed of a mass of lichens, moss, feathers, grass, and a few rootlets. The eggs were five in number, much resembling those of the Chickadee, but slightly smaller. Another set of six, brought to him by a lad and said to have been found in a nest placed in the crevice of one of the logs of a fence, were profusely spotted with brown spots. Size .59 x .47. (See "Notes on Some Birds of the Great Smoky Mountains," *Ornithologist and Oölogist*, Dec., 1886, p. 179.)

This is a curious little bird which uses its stiff tail-feathers for support while climbing trees, much after the manner of a woodpecker. It always keeps working upward, and upon reaching a point among the limbs it flies to the base of another tree and again starts to climb aloft.

56. FAMILY SITTIDÆ. NUTHATCHES

This is a small family of arboreal birds, with short, soft tail-feathers, rather long, straight bills, long wings, and strong claws, which aid in climbing. The nasal-tufts are well developed. The principal genus is the one which occurs in North America.

Genus Sitta (Linn.)

This is an almost cosmopolitan genus, members of which occur in Europe, Asia, and America. The characters are the same as those given for the family.

KEY TO SPECIES

1. Top of head brown, the color extending unbroken to the eyes. *Brown-headed Nuthatch.*
1. Top of head black or slaty, the color not extending unbroken to the eyes. See 2.
2. Sides of head white, continuous with the white of throat. *White-breasted Nuthatch.*
2. Sides of head with a dark (black or slaty) stripe, from bill through eye and down neck, thus separating white of superciliary region from white of throat. *Red-breasted Nuthatch.*

326. Sitta carolinensis carolinensis (*Lath.*). White-breasted Nuthatch.

Description: Ad. ♂.—Top of head shining black; rest of upperparts bluish gray; inner secondaries bluish gray, marked with black; wing-coverts and quills tipped with whitish; outer tail-feathers black, with white patches near their tips; middle ones bluish gray; sides of head and underparts white; lower belly and under tail-coverts mixed with rufous. *Ad.* ♀.—Similar, but black of head veiled by bluish gray. L., 6.07; T., 1.92; B., .70. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America.

Range in North Carolina.—Resident throughout the State.

The White-breasted Nuthatch is a common resident in timberlands throughout the State. It also occurs in towns that are blessed with large shade trees. Usually it may be seen in pairs running up and down the trunks and larger limbs, frequently head downwards and always very busy. While thus engaged it utters constantly its peculiar cry of *quank, quank.*

This species nests in the natural cavities of trees, or in a hole excavated by the bird itself. In this cavity a nest composed of feathers, hair, and dry leaves is loosely put together, on which some six eggs are laid, usually in this State in April. The eggs are white in ground-color, with somewhat of a rosy tinge, and are speckled and spotted with reddish brown and purple. Size .77 x .56.

Cairns says this species nests early in April in Buncombe County, while in Bertie County, near the eastern end of the State, R. P. Smithwick took three nests on April 2, 10, and 29, which were at heights respectively of six, twenty, and thirty feet. Pearson has found nests in Guilford County ranging from twenty inches to forty feet from the ground.

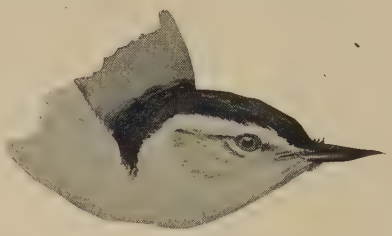


FIG. 263. WHITE-BREASTED NUTHATCH.

The bill is strong, and the bird will hammer the bark of a tree with great persistence in order to acquire possession of some coveted insect. All the members of this family are among our best friends, as they destroy vast quantities of insects, their eggs and larvæ, which are harmful to our forests. This nuthatch also eats seeds, being especially fond of those of the sunflower.

327. Sitta canadensis (*Linn.*). RED-BREASTED NUTHATCH.

Description: Ad. male.—Top of head and a wide stripe through eye to nape shining black; a white line over eye; upperparts bluish gray, no black marks on secondaries, or tips to wing-coverts; outer tail-feathers black, with white patches near their tips; middle ones bluish gray; throat white; rest of underparts ochraceous-buff. *Ad. female.*—Similar, but top of head and stripe through the eye bluish gray, like the back; underparts paler. L., 4.62; W., 2.66; T., 1.58; B., .50. (Chap., *Birds of E. N. A.*)

Range.—North America, breeding mainly north of the United States.

Range in North Carolina.—Whole State irregularly in winter; resident on some of the higher mountains where it breeds.

FIG. 264. RED-BREASTED NUTHATCH.

The Red-breasted Nuthatch is an irregular winter visitor in North Carolina at least as far east as Raleigh, where it is common some years and rare or altogether absent in others. It usually goes in small bands, perhaps composed of the brood of the previous year. In feeding it shows a preference for the smaller branches, rather than the trunks of trees. Near Raleigh it has been observed from September

BROWN-HEADED NUTHATCH. (Sitta pusilla (Lath.) Male and Female.

15 to April 15, and has been noted in ten winters during the past twenty-four. Unless one is observing birds pretty closely, it is easily overlooked, the more so as it is often local in its occurrence.

This nuthatch has been recorded as a rare resident at Highlands by Boynton, and as common and breeding on Black Mountain by Cairns. Rhoads heard it on Roan Mountain in June, 1895, and Collett tells us he has seen two in the Big Snowbird Mountains in Graham County. C. S. Brimley saw some near Double Spring Gap, Haywood County, on May 25, 1913. In the summer of 1911 Bruner and Feild observed it on both Roan Mountain and Mount Mitchell. Cairns found a nest on Black Mountain on May 10, 1886, in a dead stub twenty feet from the ground, and another six feet up, each of which contained four fresh eggs.

It excavates its nesting cavity in a dead tree, and lines it with grass. The eggs number from four to six. They have a white ground-color, very thickly spotted with reddish brown. Size .60 x .50.

328. Sitta pusilla (*Lath.*). BROWN-HEADED NUTHATCH.

Description.—Ashy blue above; whitish below; top of head grayish brown, a white spot on nape; under tail-feathers black, tipped with grayish. L., 4.50; W., 2.60; T., 1.25.
Range.—South Atlantic and Gulf States, north to Virginia.
Range in North Carolina.—Resident in the central and eastern portions of the State, not known to occur in the mountains.

Throughout the State, east of the mountains, this is the most common nuthatch, and particularly is this the case in pine woods. It is much given to traveling in bands. In spring a pair will select some suitable fence-post, tall stump, or dead limb, of the proper degree of softness from decay, and begin industriously to excavate a hole in which to nest. Several holes may be commenced and abandoned before one entirely to their taste is found. The final choice is dug to a depth of about six inches below the irregular entrance hole, and this is lined with strips of bark, chips, leaves, cotton, and the wings of the seeds of pine. The peculiar pungent odor of the bird is imparted to the nest. The eggs are four to six in number, usually laid about the end of March or beginning of April, though belated nests have been taken as late as May 15. Their ground color is white, spotted heavily with reddish brown and lavender, the markings being usually rather evenly distributed. Size .60 x .50. The height of the nest varies from eighteen inches to twelve feet from the ground. Pearson found a pair of these birds excavating a nesting hole in a pine stump in open woods near Greensboro, on May 5, 1893.

"I made some notes in 1888 on the time occupied by this species in preparing dwellings for occupation. The first pair I noted had finished digging out the hole and had commenced to line it on March 22. Sixteen days later the nest contained four fresh eggs. Pair No. 2 had just begun building on April 16, and in ten days more the nest was finished and fresh eggs laid. Pair No. 3 worked for twenty-two days on one hole, and when I then lost patience and broke it out to see what they had done, they had not even started to line it. They then commenced on another stump, and in twenty-two more days had the excavation completed, lined, and three eggs laid. Pair No. 4 dug a hole, lined it, and laid three eggs in thirteen days."—C. S. BRIMLEY.

57. FAMILY PARIDÆ. TITMICE

Small birds, nearly allied to the nuthatches, but differing in having short, stout bills and comparatively long tails. The family is a cosmopolitan one. Two easily distinguished genera occur with us.

KEY TO GENERA

1. Head crested; throat and crown not black. *Bæolophus.*
1. Head not crested; throat and crown black. *Penthestes.*

Genus Bæolophus (Cab.)

329. Bæolophus bicolor (*Linn.*). TUFTED TITMOUSE.

Description.—Grayish ash, whitish below; head crested, forehead black, flanks tinged with rusty. L., 6.00; W., 3.00; T., 2.70.
Range.—Eastern United States.
Range in North Carolina.—Whole State at all seasons.

FIG. 265. TUFTED TITMOUSE.

The Tufted Titmouse, so well known by its loud, clear whistle and crested head, is an abundant bird everywhere in North Carolina, breeding from late April to early June. The nests are placed in the natural hollows of trees. The bird frequently fills these cavities with dead leaves and other material for a depth of a foot or more, before building the nest proper, which is composed of green moss and leaves, lined with cotton, fur, fine grass, or roots. The eggs are pure white or light cream in ground-color, profusely speckled and spotted with different shades of reddish brown. Size .75 x .53. In number the eggs vary from five to seven, and are covered by the bird when it leaves the nest. Cairns remarks that the female does all the building, and that the male provides her food while so occupied. He also states that when the nest is disturbed the birds will remove the eggs. The female is very hard to flush from the nest, and will often allow herself to be caught

rather than leave her eggs. The same authority further says that out of one hundred nests he examined the lowest was five feet, and the highest sixty-five feet from the ground.

Genus Penthestes (Reichenb.)

KEY TO SPECIES

1. Wing considerably longer than tail; greater wing-coverts without distinct whitish edging; black of throat sharply defined behind. *Carolina Chickadee.*
1. Wing little if any longer than tail; greater wing-coverts with distinct whitish edgings; black of throat more or less broken behind. *Chickadee.*

330. Penthestes atricapillus atricapillus (*Linn.*). CHICKADEE.

Description: Ads.—Top of the head, nape, and throat shining black; sides of the head and neck white; back ashy; outer vanes of greater wing-coverts distinctly margined with white; wing and tail-feathers margined with whitish; breast white; belly and sides washed with c eam-buff. L., 5.27; W., 2.53; T., 2.43; B., .37. (Chap., *Birds of E. N. A.*)
Range.—Eastern North America, mainly north of Virginia.
Range in North Carolina.—Resident on some of the higher mountains.

The Chickadee is the common northern species, but in this State and southward it is replaced by the next, except on the higher mountains.

So far, it has been noted by Cairns as a common resident on the Black Mountains in Buncombe County at an elevation of 5,000 feet and over; by Brewster, who found it from 5,000 feet upward in 1885; and by Metcalf, who heard the birds on Jones's Balsam Mountain, near Waynesville, at an elevation of 5,000 to 6,000 feet, September 17, 1908.

The habits are similar to those of the Carolina Chicadee, but the notes are said to be decidedly different.

331. Penthestes carolinensis carolinensis (*Aud.*). CAROLINA CHICKADEE.

Description.—Similar to the preceding species, but smaller; greater wing-coverts not margined with whitish; wing and tail-feathers with less white on their outer vanes. L., 4.06–4.75; W., 2.20–2.48; T., 1.88–2.12; B., .30–.32. (Chap., *Birds of E. N. A.*)
Range.—Southern States, from Virginia southward.
Range in North Carolina.—Whole State at all seasons, except, except the summits of the higher mountains.

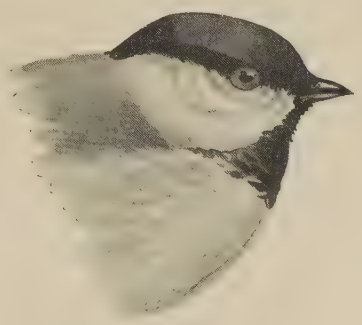


FIG. 266. CAROLINA CHICKADEE.

The Carolina Chickadee is the common "Tomtit" of our State, being abundant wherever trees and bushes abound.

The nest is built in a natural cavity in a dead or living tree, or in a hole dug by the birds themselves in a dead stub or stump, occasionally even in the abandoned hole excavated by some other bird. The cavity is lined with feathers, fur, cotton, cattail fluff, moss, hair, bark strips, and similar materials matted rather than woven together. It is usually about six inches below the entrance hole, which is itself at a height of from two to twelve feet from the ground. The eggs number four to seven, and are white, sprinkled with small blotches and specks of reddish brown. Size .60 x .50. April is the usual month for nesting.

This is an active little bird, and when feeding may often be seen hanging back downward on a pine-cone, or on a bunch of dead leaves caught in the branches.

58. FAMILY SYLVIIDÆ. KINGLETS, GNATCATCHERS, ETC.

This family contains many species of small birds which in the Old World take the place occupied in America by the Wood Warblers. In this country it is represented only by the almost cosmopolitan genus *Regulus*, and the American genus *Polioptila*.

KEY TO GENERA

1. Wings decidedly longer than tail; color olivaceous. *Regulus*.
1. Wings and tail about equal; color ashy blue. *Polioptila*.

Genus Regulus (Cuv.)

KEY TO SPECIES

1. Crown yellow, bordered with black in front and on sides; male with a central patch of orange in the middle of the yellow. *Golden-crowned Kinglet.*
1. Crown without black or yellow; male with a concealed crown-patch which is usually bright red, but very rarely yellow. *Ruby-crowned Kinglet.*

332. Regulus satrapa satrapa (*Licht.*). GOLDEN-CROWNED KINGLET.

Description.—Olivaceous above, whitish below; crown with a yellow patch bordered with black (orange-red in center in male); forehead and line over eye whitish. L., 4.10; W., 2.15; T., 1.75.

Range.—Eastern North America, breeding mainly north of the United States.

Range in North Carolina.—Winter visitor throughout the State; resident and breeds on some of the higher mountains.

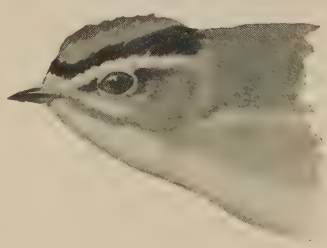


FIG. 267. GOLDEN-CROWNED KINGLET.

This is a common winter visitor in this State, arriving about the middle of October and leaving in April. While here it usually goes in troops, frequenting groves of evergreens.

In western North Carolina it is known to breed on Black Mountain above the fir belt. Kopman's record of seeing one on August 24, 1898, at Cloudland, Mitchell County, would point to their breeding in the vicinity of Roan Mountain. Feild and Bruner found young birds on Grandfather Mountain June 24, 1911, at an elevation of 5,000 feet. Birds were also observed by them the same year on Roan Mountain, July 1, at 6,100 feet, and on Mount Mitchell, July 15, at 6,500 feet elevation. Sherman heard them at Double Spring Gap in Haywood County, May 25, 1913.

The nest of the Golden-crowned Kinglet is built among the slender twigs of spruces and perhaps other evergreens. It is composed of green mosses, mixed with lichens, and lined with delicate strips of soft inner bark and black rootlets. The eggs vary from creamy white to very deep cream-color, sprinkled with numerous brown markings of various sizes. Size .56 x .44. The number of eggs to the set appears to be usually nine.

333. Regulus calendula calendula (*Linn.*). Ruby-crowned Kinglet.

Description.—Olivaceous above, buffy below; crown in male with a concealed crown-patch which is usually bright red, but very rarely yellow; underparts whitish, tail slightly forked. *Im.*—Without the crown-patch. L., 4.40; W., 2.25; T., 1.75.

Range.—North America, breeding mainly north of the United States.

Range in North Carolina.—Winter visitor in the central and eastern parts of the State, transient in the mountains.

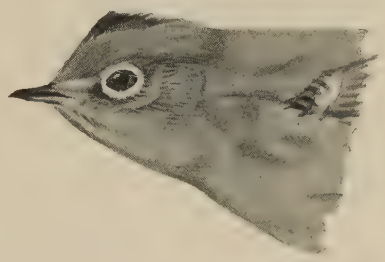


Fig. 268. Ruby-crowned Kinglet.

Throughout most of North Carolina this Kinglet is a winter visitor. It never goes in troops and is more often seen during the migrations than in winter. It has been found at Raleigh as early as October 1 and as late in spring as May 10.

In the mountains it has been noted between October 6 and November 6 in the fall and between April 3 and May 7 in the spring migration.

This bird has a habit of slightly fluttering its wings when hopping from twig to twig, and this custom, together with its pale orbital ring, will usually serve to identify it in the field. It is a good singer and indulges much in its musical abilities during late March and early April.

The yellow crown-patch appears to be quite unusual, as out of forty-four specimens taken at Raleigh by H. H. and C. S. Brimley only three were found with any yellow on the crown.

Genus Polioptila (Scl.)

334. Polioptila cærulea cærulea (*Linn.*). BLUE-GRAY GNATCATCHER.

Description: Ad. male.—Upperparts bluish gray; forehead and front of the head narrowly bordered by black; wings edged with grayish, the secondaries bordered with whitish; outer tail-feathers white, changing gradually until the middle ones are black; underparts dull grayish white. *Ad. female.*—Similar, but without the black on the head. L., 4.50; W., 2.05; T., 2.00; B., .40. (Chap., *Birds of E. N. A.*)

Range.—United States, wintering in Gulf States and southward.

Range in North Carolina.—Whole State in summer.

FIG. 269. BLUE-GRAY GNATCATCHER.

The Blue-gray Gnatcatcher reaches the State about the last week in March, and has been recorded as late as October 2 at Raleigh, and September 9 at Weaverville. This is a common species wherever found, easily recognized by its long black tail, bluish color, and squeaky, high-pitched notes. It breeds from late April to early June, building its pretty lichen-covered nest (which resembles a large model of that of the Ruby-throated Hummingbird) on the horizontal limb of a sweet-gum, birch, pine, oak, willow, apple, ash, cedar, or other tree. The eggs are five or six in number and are greenish or bluish white in ground color, speckled with chestnut. Size .57 x .44. The heights of nests we have taken varied from five to thirty-five feet.

Pearson has found that in Guilford County these birds show a decided preference for white-oak trees as nesting sites. On two occasions he has observed males singing while sitting in the nest.

Although the usual notes are not particularly attractive, the song is really quite melodious. Both sexes aid in the construction of the nest.

Since the above was written the following note has been received from Ludlow Griscom: "One bird seen by all three of us (Johnson, Nicholls and the writer) on December 30 and 31, 1916, on Pamunkey Island (Currituck Sound)."

59. FAMILY TURDIDÆ. THRUSHES AND BLUEBIRDS

The thrushes constitute a large and cosmopolitan family, represented by more species in the Old World than in America. They are mostly plain-colored, and many of them are fine singers, as is well illustrated by the Wood Thrush in America and the Song Thrush in Europe.

KEY TO GENERA

1. Breast spotted. *Hylocichla.*
1. Breast not spotted. See 2.
2. Color not blue. *Planesticus.*
2. Color blue. *Sialia.*

Genus Hylocichla (Baird)

This includes all those thrushes of our fauna which have the breast spotted in the adult as well as in the young.

KEY TO SPECIES

1. Sides as well as breast distinctly spotted; ground-color of underparts white. *Wood Thrush.*
1. Sides grayish or brownish, unspotted; breast more or less tinged with buffy. See 2.
2. Tail rufous, in decided contrast with dull brown of back. *Hermit Thrush.*
2. Tail same color as back. See 3.
3. A distinct buffy orbital ring. *Olive-backed Thrush.*
3. No lighter orbital ring. See 4.
4. Tawny brown above; chest creamy buff with rather indistinct spots. *Veery.*
4. Olive-brown above; chest pale buffy, with large distinct spots. See 5.
5. Length 7.00–7.75; wing 3.75 or more. *Gray-cheeked Thrush.*
5. Length 6.25–7.25; wing about 3.75 or less. *Bicknell's Thrush.*

FIG. 270. WOOD THRUSH.

335. Hylocichla mustelina (*Gmel.*). WOOD THRUSH.

Description.—Cinnamon brown, brightest on head and becoming olive on the rump; breast white, with large round distinct spots, except on the throat and center of belly. L., 8.25; W., 4.35; T., 2.90.

Range.—Eastern United States, wintering beyond our borders in Central America, West Indies, etc.

Range in North Carolina.—Whole State in summer.

The Wood Thrush, "Wood Robin," "Swamp Robin," or "Quillaree," arrives in North Carolina in the forepart of April and has been observed as late as the middle of October. It breeds in May and June, building its nest chiefly of weed stems and leaves and plastering it inside with mud. The nest, as a rule, is placed in a small tree at a height of from three to twelve feet from the ground, and in it are laid four greenish-blue, unspotted eggs, which average about 1.00 x .75.

This bird is a very melodious singer, the loud and liquid notes sounding particularly sweet in the early morning, and doubtless the mountain name "Quillaree" is a supposed imitation of its song. Pearson has called attention to the fact that among the large trees on the campus of the State University at Chapel Hill these birds greatly outnumber the robins, while on the campus at Guilford College, where apparently about the same natural conditions prevail, the reverse is the case.

336. Hylocichla fuscescens fuscescens (*Steph.*). VEERY.

Description: Ads.—Upperparts, wings, and tail nearly uniform cinnamon-brown, not so bright as in the Wood Thrush; center of the throat white; sides of the throat and breast with a delicate tinge of cream-buff, spotted with small wedge-shaped spots of nearly the same color as the back; belly white; sides white, with only a faint tinge of grayish. L., 7.52; W., 3.84; T., 2.87; B., .53.

Remarks.—The Veery's distinguishing characters are: (1) its uniform cinnamon-brown upperparts: (2) its delicately marked breast; and (3) particularly its almost white sides. The Wood Thrush has the sides heavily spotted, and the other thrushes have this part more or less strongly washed with grayish or brownish. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America in summer.

Range in North Carolina.—Transient, except in the mountains, where it is a summer visitor above 3,500 feet.

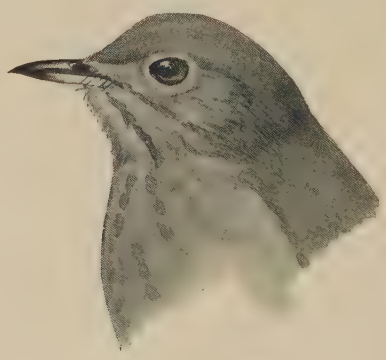


FIG. 271. VEERY.

The Veery or Wilson's Thrush is a rare transient at Raleigh in May and September, and has also been observed at Chapel Hill during the migrations.

In the mountains it has been recorded as common above 3,500 feet in Buncombe County (Cairns), and nests there in May. Brewster found it on Black Mountain and near Highlands in 1884, at from 3,500 to 5,000 feet elevation. Rhoads reported it common on Roan Mountain at from 3,000 to 5,000 feet in June, 1895, and saw a pair nest-building. Sherman and C. S. Brimley collected one and saw another on Joanna Bald Mountain, near Andrews, May 14, 1908, at an elevation of 4,000 feet. Collett says it is common on the Big Snowbird Mountains in Graham County;

Pearson heard one singing at Blowing Rock in August, 1905. The Veery seems to prefer thick, damp woods as a usual habitation.

The nest is placed on the ground at the base of a sapling, or occasionally in the hollow trunk of a tree at some distance from the ground. It is composed of leaves, strips of bark and weed stems, and is lined with black rootlets. The eggs are usually four, pale greenish blue, without markings, and measure about .87 x .65.

The song of the Veery, in common with other species of the genus, is exceedingly melodious, and is frequently rendered late in the evening.

337. **Hylocichla aliciæ aliciæ** (*Baird.*) Gray-cheeked Thrush.

Description: Ad.—Upperparts uniform olive, with little difference between the colors of the back and tail; eye-ring whitish, lores grayish; middle of the throat and middle of the belly white; sides of the throat and breast with a very faint tinge of cream-buff (richer in the fall); the feathers of the sides of the throat spotted with wedge-shaped marks, those of the breast with half-round black marks; sides brownish gray or brownish ashy. L., 7.58; W., 4.09; T., 2.96; B., .55.

Remarks.—The uniform olive of the upperparts of this species at once separates it from our other eastern thrushes, except its subspecies *bicknelli* and the olive-backed Thrush. From the latter it may be known by the comparative absence of buff on the breast and sides of the throat, by its whitish eye-ring and grayish lores. (Chap., *Birds of E. N. A.*)

Range.—Northern North America, breeding far northward, and wintering in Central America.

Range in North Carolina.—Spring and fall transient throughout the State.

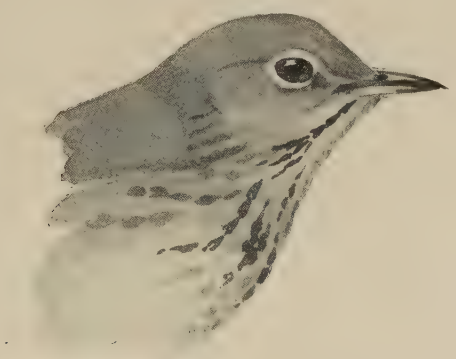


Fig. 272. Graycheeked Thrush.

This species has been observed at Fort Macon in April and May, 1871 (Coues); at Raleigh, May 4 to 24; in the fall, October 2 to 12 (C. S. Brimley); and at Weaverville, September 20–22, 1890 (Cairns).

It is a dark and slender Thrush, and in measurements is very similar to the Wood Thrush, though not in build.

338. **Hylocichla aliciæ bicknelli** (*Ridgw.*). Bicknell's Thrush.

Description.—Similar to preceding but smaller. L., 6.25–7.25; W., 3.35–3.75; T., 2.60–2.70.

Range.—Higher mountains of eastern United States in summer.

Range in North Carolina.—So far, only known as a transient at Raleigh and Weaverville and a possible breeder on Black Mountain.

Bicknell's Thrush occurs at Raleigh sparingly in the migrations, having been taken from May 3 to 18 in spring, and from September 24 to October 12 in the

fall. At Weaverville Cairns recorded it from September 11 to November 10, and stated that he once killed one on Black Mountain in August.

The nest is said to be placed only a few feet from the ground against the trunk of a coniferous tree. The eggs are light bluish green, speckled with brown. Size .87 x .63.

This is merely a smaller and more southerly nesting form of the Gray-cheeked Thrush, and the two intergrade in size, so identification is often difficult.

339. Hylocichla ustulata swainsoni (*Tsch.*). OLIVE-BACKED THRUSH.

Description: Ad.—Upperparts uniform olive; back and tail practically the same color; eye-ring deep cream-buff, lores the same; whole throat and breast with a strong tinge of deep cream-buff or even ochraceous-buff; the feathers of the sides of the throat with wedge-shaped black spots at their tips, those of the breast with rounded black spots at their tips; middle of the belly white; sides brownish gray or brownish ashy. L., 7.17; W., 3.93; T., 2.76; B., .50.

Remarks.—This bird will be confused only with the Gray-cheeked and Bicknell's Thrushes, from which it differs in the much stronger suffusion of buff on the throat and breast, its buff eye-ring and lores. (*Chap., Birds of E. N. A.*)

Range.—North America, except the Pacific coast, breeding mainly north of the United States, wintering in extreme southern United States and southward.

Range in North Carolina.—Transient in the central section of the State, occasionally breeds in the mountains.

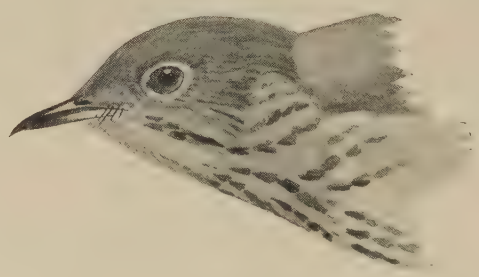


FIG. 273. OLIVE-BACKED THRUSH.

The Olive-backed Thrush has been observed at Raleigh from April 22 to May 17 in the spring, and from September 25 to October 17 in the fall. At Chapel Hill it was taken on September 26 and October 9, 1897 (Pearson). In the mountains we find it recorded from Blowing Rock September 12, 1898 (Kopman), and from Weaverville April 4 to 6, 1890, and September 2 to October 16. Cairns took a nest May 20, 1896, on Craggy Mountain (Smithwick's *Catalogue*), and Davis, in a migration schedule for 1899 from Asheville, says it has been taken twice in summer on the higher mountains.

The nest is built in a bush or small tree usually from four to eight feet from the ground, and is composed of leaves, shreds of bark, small twigs, and moss. The three or four eggs are greenish blue, speckled with reddish brown. Size .92 x .66.

340. Hylocichla guttata pallasi (*Cab.*). HERMIT THRUSH.

Description: Ad.—Upperparts olive-brown, sometimes cinnamon-brown; tail pale rufous, of a distinctly different color from the back; throat and breast with a slight buffy tinge; feathers of the sides of the throat with wedge-shaped black spots at their tips; those of the breast with large, rounded spots; middle of the belly white; sides brownish gray or brownish ashy. L., 7.17; W., 3.56; T., 2.74; B., .51.

Remarks.—The Hermit Thrush may always be easily identified by its rufous tail. It is the only one of our thrushes which has the tail brighter than the back. (Chap., *Birds of E. N. A.*)

Range.—Eastern North America, breeding from northern United States northward, wintering from Virginia southward.

Range in North Carolina.—Winter visitor throughout the State.

FIG. 274. HERMIT THRUSH.

The Hermit Thrush is a common winter visitor in the whole of the State, arriving some time in October. Our latest spring records are April 29 (1892) for Raleigh and May 15 for Weaverville.

This bird stays mainly in heavy, damp woods, and in the thick growth along streams, feeding to some extent on small wild fruits and berries, such as frost-grapes, holly berries, the berries of the dogwood and of *Ilex decidua*. It is usually seen on or near the ground.

Genus Planesticus

341. Planesticus migratorius migratorius (*Linn.*). ROBIN.

Ads.—Top and sides of the head black, a white spot above and below the eye; rest of the upperparts grayish slate-color; margins of wings slightly lighter; tail blackish, the outer feathers with white spots at their tips; throat white, streaked with black; rest of the underparts rufous (tipped with white in the fall), becoming white on the middle of the lower belly; bill yellow, brownish in fall. *Im. females* average paler below and with less black on the head, but fully adult birds are as richly colored as the brightest males. *Nestling.*—Back and underparts spotted with black. L., 10.00; W., 4.96; T., 3.87; B., .84. (Chap., *Birds of E. N. A.*)

Range.—Eastern and northern North America.

Range in North Carolina.—Whole State in winter and during the migrations; apparently also the breeding bird of the mountain region.

The Robin, which is the northern and principal form of the species, occurs commonly in our State during the migrations, and is more or less plentiful in winter, particularly in the eastern counties. Its abundance in a locality depends much on the food supply. In the greater part of the State the Robin is more conspicuous during portions of February, March, and early April than at any other time. At this period it frequents open fields, particularly newly ploughed lands, where it feeds on the insects that have been exposed by the plough. In the early winter great flocks are often seen in the eastern half of the State, feeding on the berries of the black-gum and holly trees.

C. S. Brimley found it breeding at Blantyre, in early May, 1908, and Sherman discovered the species abundant at Blowing Rock in June, 1909. In May, 1908, we also found it common and apparently settled down to breed at Hendersonville, Toxaway, Sapphire, Franklin, Aquone, and Andrews, and saw two on the top of Joanna Bald Mountain. The nest is much like that of the Wood Thrush, only larger, but the inner lining of mud is more extensive. The eggs are four in number, of a greenish blue ground color, unspotted. Size about 1.16 x .80.

341. Planeoticus migratorius achrusterus (*Batch.*). SOUTHERN ROBIN.

Smaller than *migratorius*, colors in general much lighter and duller. W., 4.80; T., 3.60. (Chap., *Birds of E. N. A.*)

Range.—Southern States, limits of range not well known.

Range in North Carolina.—Central and part of the eastern counties in summer.

This form, which is nothing more than the extreme southern variation of the Robin, is found commonly breeding at Raleigh (C. S. Brimley), Chapel Hill and Greensboro (Pearson), while at Wake Forest it is, according to Dr. W. L. Poteat, the most common bird on the campus in summer. At all of these places it seems to be especially partial to lawns and gardens. Other places from which it has been recorded are Southern Pines, where C. S. Brimley found it abundant in late June, 1909; Gatesville, July 18, 1909, and Grimesland, Pitt County, July 30, 1909 (Sherman); and Belvidere, Perquimans County, where three pairs were seen nesting on April 25, 1898 (Pearson). The southern limit of its range in North Carolina is an interesting problem yet to be solved by students of bird-life.

Genus Sialia (Swains.)

342. Sialia sialis sialis (*Linn.*). BLUEBIRD.

Ad. male.—Upperparts, wings, and tail bright blue, tipped with rusty in the fall; throat, breast, and sides dull cinnamon-rufous; belly white. *Ad. female.*—Upperparts with a grayish tinge; throat, breast, and sides paler. *Nestling.*—Back spotted with whitish; the breast feathers margined with fuscous. L., 7.01; W., 3.93; T., 2.58; B., .47. (Chap., *Birds of E. N. A.*)

Range.—Whole country east of the Rocky Mountains.

Range in North Carolina.—Whole State at all seasons, breeding throughout its range.

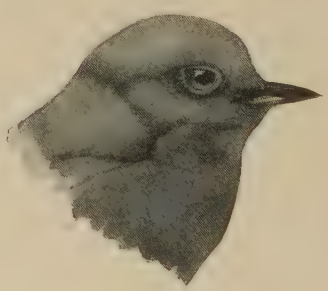


FIG. 275. BLUEBIRD.

The Bluebird is one of our most familiar birds, and nests everywhere in natural hollows in trees, often in orchards or near houses, but just as frequently in situations remote from the haunts of man. The bottom of the hollow is lined with

ROBIN. Planesticus migratorius migratorius (Linn.) Male and Female.

grass, and in this simple cradle the Bluebird lays its four or five pale-blue eggs. Occasionally white eggs are found, and when this is the case the whole set is white. At Raleigh nests containing eggs have been found as early as April 13 (1888) and as late as June 26 (1886).

The Bluebird feeds in summer mainly on insects and in winter chiefly on various kinds of berries. In February, 1895, a blizzard covered the earth and trees with ice for many days. The Bluebirds, thus being unable to procure food beneath its glittering mantle, were starved and frozen by thousands. The species through virtually the whole of the eastern United States suffered in the same way, and apparently came very near being exterminated. For several years subsequently it was a rare sight to see a Bluebird. They have now, however, about regained their former numbers.

Bluebirds will build their nest in a box placed on a pole in the garden or nailed to a tree in the lawn. The pleasure of having them about the premises will well repay one for the small labor involved in providing them with a suitable nesting box.

APPENDICES

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II. MIGRATION OF BIRDS AT RALEIGH, N. C., 1885-1915

AS RECORDED BY H. H. BRIMLEY, C. S. BRIMLEY, AND S. C. BRUNER.

A. SPRING MIGRATION

Name of Bird.	Earliest Arrival.	Average Arrival.	Latest Noted.	Length of Stay.
Chipping Sparrow	Feb. 23, '12	Mar. 8	Nov. 25, '88	8 mos. 20 days.(*a*)
*Rusty Blackbird	Feb. 15, '90		April 20, '88	2 mos. 5 days.(*b*)
Yellow-throated Warbler	Mar. 13, '90	Mar. 24	Sept. 20, '01	6 mos. 7 days.
Louisiana Water-Thrush	Mar. 14, '08	Mar. 26	Aug. 22, '88	5 mos. 8 days.
King Rail	Mar. 9, '05		Nov. 17, '92	8 mos. 8 days.(*c*)
Blue-gray Gnatcatcher	Mar. 16, '94	Mar. 24	Oct. 2, '86, '89	6 mos. 17 days.
Purple Martin	Mar. 16, '07		Sept. 9, '07	5 mos. 24 days.
Blue-headed Vireo	Mar. 18, '90	Mar. 25	Nov. 15, '86	7 mos. 27 days.(*d*)
*Pied-billed Grebe	Mar. 19, '89		April 20, '09	1 mo. 1 day.
Black-and-white Warbler	Mar. 19, '94	Mar. 27	Oct. 13, '86, '91	6 mos. 25 days.(*e*)
*Henslow's Sparrow	Mar. 18, '98		May 3, '01	1 mo. 15 days.
*Bittern	Mar. 19, '08	Mar. 31	May 30, '93	2 mos. 11 days.(*f*)
Maryland Yellow-throat	Mar. 20, '94	Mar. 26	Oct. 24, '93	7 mos. 4 days.(*g*)
*Black-throated Green Warbler	Mar. 22, '97, '98	Mar. 27	May 11, '94	1 mo. 19 days.
*Pectoral Sandpiper	Mar. 22, '93	Mar. 25	April 15, '15	24 days.
*Greater Yellowlegs	Mar. 22, '93	April 1	May 29, '88	2 mos. 7 days.
*Osprey	Mar. 18, '11	Mar. 30	May 6, '91	1 mo. 18 days.
*Blue-winged Teal	Mar. 23, '88		May 6, '89	1 mo. 13 days.(*h*)
White-eyed Vireo	Mar. 24, '99	Mar. 31	Oct. 16, '07	6 mos. 23 days.(*i*)
Grasshopper Sparrow	Mar. 25, '97		Oct. 22, '92	6 mos. 28 days.
*Yellowlegs	Mar. 25, '93	April 3	May 18, '88	1 mo. 24 days.
*Tree Swallow	Mar. 25, '97	April 3	May 5, '88	1 mo. 10 days.(*j*)
*Upland Plover	Mar. 28, '96		April 30, '87	1 mo. 2 days.
Rough-winged Swallow	Mar. 28, '08		July 17, '86, '08	3 mos. 20 days.
Green Heron	Mar. 29, '93	April 9	Oct. 2, '94	6 mos. 4 days.
Bachman's Sparrow	April 1, '85		Sept. 20, '01	5 mos. 19 days.(*k*)
Parula Warbler	April 1, '89	April 10	Oct. 14, '90	6 mos. 13 days.
Whip-poor-will	April 1, '92	April 10	Nov. 6, '94	7 mos. 5 days.
*House Wren	April 1, '87	April 17	May 4, '85	1 mo. 3 days.
*Barn Swallow	April 2, '88	April 7	May 25, '99	1 mo. 23 days.
Redstart	April 2, '88	April 12	Oct. 13, '86, '91	6 mos. 11 days.
Yellow-throated Vireo	April 3, '88	April 14	Sept. 16, '91	5 mos. 13 days.
Spotted Sandpiper	April 3, '93	April 15	Sept. 14, '91	5 mos. 11 days.
Chimney Swift	April 4, '89	April 16	Oct. 4, '11	6 mos.
Yellow Warbler	April 5, '88	April 14	Sept. 20, '93	5 mos. 15 days.(*l*)
Prairie Warbler	April 6, '92	April 14	Sept. 20, '01	5 mos. 14 days.
Red-eyed Vireo	April 6, '88	April 16	Oct. 16, '07	6 mos. 10 days.
Summer Tanager	April 6, '88	April 17	Sept. 30, '86	5 mos. 24 days.
*Virginia Rail	April 6, '00		May 9, '00	1 mo. 3 days.(*m*)
*American Coot	April 6, '98		May 16, '84	1 mo. 10 days.(*n*)

SPRING MIGRATION—*Continued.*

Name of Bird.	Earliest Arrival.	Average Arrival.	Latest Noted.	Length of Stay.
Black-crowned Night Heron	April 6, '15 only.			
*Solitary Sandpiper	April 4, '89	April 24	May 25, '94	1 mo. 21 days.
Ovenbird	April 7, '92	April 17	Oct. 23, '85	6 mos. 16 days.
Broad-winged Hawk	April 8, '90, '97	April 10	Aug. 26, '89	4 mos. 18 days.
*Sora Rail	April 8, '86	April 19	May 13, '89	1 mo. 5 days.
*Cape May Warbler	April 7, '92	----------	May 9, '92	1 mo. 2 days.
Crested Flycatcher	April 9, '88	April 16	Sept. 28, '93	5 mos. 19 days.
Hooded Warbler	April 10, '93	April 16	Oct. 1, '91	5 mos. 21 days.
Wood Thrush	April 9, '11	April 16	Oct. 16, '85	6 mos. 6 days.
Ruby-throated Hummer	April 10, '95	April 18	Oct. 7, '07	5 mos. 27 days.
Chuck-will's-widow	April 10, '90	April 22	Sept. 21, '03	5 mos. 11 days.
Kingbird	April 12, '15	April 19	Sept. 18, '93	5 mos. 6 days.
*Loon	April 13, '92 only.			
Yellow-crowned Night Heron	April 2, '15	----------	July 24, '94	3 mos. 22 days.
Nighthawk	April 15, '87	----------	Oct. 6, '86	5 mos. 22 days.
Catbird	April 16, '90, '96	April 20	Oct. 21, '93	6 mos. 5 days.(*o*)
Orchard Oriole	April 16, '88	April 25	Aug. 22, '93	4 mos. 6 days.
Yellow-breasted Chat	April 18, '88	April 24	Sept. 13, '01	4 mos. 26 days.
Wood Pewee	April 18, '10	April 25	Oct. 13, '91	5 mos. 25 days.
Prothonotary Warbler	April 18, '87	----------	Aug. 26, '90	4 mos. 8 days.
*Water-thrush	April 18, '93	April 27	May 28, '87	1 mo. 10 days.
*Black Tern	April 18, '07	----------	May 10, '98	22 days.
*Bobolink	April 19, '88	May 2	May 27, '87	1 mo. 8 days.
Worm-eating Warbler	April 19, '85, '87	April 24	Sept. 20, '93	5 mos. 1 day.
Acadian Flycatcher	April 20, '94	April 30	Sept. 11, '88, '93	4 mos. 21 days.
*Florida Gallinule	April 20, '07 only.			
*LeConte's Sparrow	April 21, '94 only.			
*Long-billed Marsh Wren	April 21, '92	April 29	May 7, '05	16 days.(*p*)
*Rose-breasted Grosbeak	April 22, '09	----------	May 8, '85, '97	16 days.
*Olive-backed Thrush	April 22 '92	----------	May 17, '93	25 days.
*Scarlet Tanager	April 23, '91	----------	May 17, '93	25 days.
Kentucky Warbler	April 18, '10	May 5	Oct. 13, '88	5 mos. 26 days.
Indigo Bunting	April 23, '00	May 2	Oct. 19, '07	5 mos. 27 days.
*Wilson's Thrush	April 23, '85	----------	May 14, '15	21 days.
*Bank Swallow	April 24, '88 only.			
*Black-throated Blue Warbler	April 23, '92	April 27	May 19, '88	27 days.
*Cliff Swallow	April 26, '89	----------	May 9, '91	13 days.
*Baltimore Oriole	April 26, '90	----------	May 4, '15	8 days.
Blue Grosbeak	April 25, '88	May 3	Sept. 27, '87	5 mos. 2 days.
Bachman's Warbler	April 27, '91			
*Chestnut-sided Warbler	April 27, '86	----------	May 15, '90	18 days.
*Black-poll Warbler	April 28, '94	May 4	May 29, '91	1 mo. 1 day.
*Least Sandpiper	April 30, '85	----------	May 24, '09	24 days.
Yellow-billed Cuckoo	April 30, '05, '07	May 6	Oct. 17, '87	5 mos. 17 days.
Black-billed Cuckoo	May 2, '87	----------	Oct. 10, '91	5 mos. 8 days.
Least Bittern	May 3, '89	----------	Sept. 11, '88	4 mos. 8 days.
*Bicknell's Thrush	May 3, '94	----------	May 18, '89	15 days.
*Short-billed Marsh Wren	May 3, '92 only.			
*Gray-cheeked Thrush	May 4, '94	----------	May 24, '92	20 days.
*Semi-palmated Plover	May 5, '84	----------	May 22, '09	17 days.
*Bay-breasted Warbler	May 5, '15 only.			
*Blue-winged Warbler	April 26, '12	----------	May 6, '07	10 days.
*Golden-winged Warbler	May 7, '89, '91			
*Cerulean Warbler	May 8, '93 only.			
*Magnolia Warbler	May 10, '89	----------	May 15, '93	5 days.
*Wilson's Warbler	May 11, '93	----------	May 19, '15	8 days.
*Canadian Warbler	May 13, '92, and	May 18,	'12.	
*Alder Flycatcher	May 14, '92	----------	May 16, '93	2 days.

SPRING MIGRATION—*Continued.*

Name of Bird.	Earliest Arrival.	Average Arrival.	Latest Noted.	Length of Stay.
*Semi-palmated Sandpiper	May 22, '09 only.			
*White-rumped Sandpiper	May 22, '09		May 24, '09	2 days.
†Wood Ibis	July 4, '06 only	definite date.		
†Little Blue Heron	June 21, '94		Aug. 21, '93	2 mos.
†Egret	July 15, '84 only.			

NOTES ON PRECEDING TABLE

Unmarked species are summer visitors.

* Signifies species that are transients, *i. e.*, here only during migration.

† Signifies summer stragglers, *i. e.*, species that wander here from their breeding grounds after the young are able to fly.

a. Chipping Sparrow once on December 29, 1890.
b. Rusty Blackbird once on December 16, 1889.
c. King Rail once each on January 23, 1890, and February 29, 1896.
d. Blue-headed Vireo once each on December 15, 1885, and January 3, 1891.
e. Black-and-white Warbler once on November 10, 1885.
f. Bittern once on December 7, 1886.
g. Maryland Yellow-throat occasional in winter.
h. Blue-winged Teal once on December 7, 1893.
i. White-eyed Vireo once on March 3, 1890.
j. Tree Swallow once on March 12, 1887.
k. Bachman's Sparrow once on March 9, 1887.
l. Yellow Warbler only very occasional after July.
m. Virginia Rail once on March 7, 1891.
n. Coot once on December 1, 1882.
o. Catbird occasionally seen late in autumn and rarely in winter.
p. Long-billed Marsh Wren seen rarely in January and March.

Where no average dates of arrival are given, the records are either too meager or irregular to warrant such.

Records of other stragglers are: Dowitcher, July 29, 1884; White Pelican, May 12, 1884; and Lark Sparrow, August 19, 1889, and October 23, 1893.

B. FALL MIGRATION

Name of Bird.	Earliest Arrival.	Average Arrival.	Latest Noted.	Length of Stay.
*Solitary Sandpiper	July 14, '94		Oct. 10, '95	2 mos. 27 days.
*Water Thrush	July 25, '95	Aug. 16	Oct. 6, '94	2 mos. 11 days.
*Black Tern	July 28, '84		Sept. 23, '92	1 mo. 26 days.
*Barn Swallow	Aug. 6, '99	Aug. 10	Sept. 16, '86	1 mo. 10 days.
*Pied-billed Grebe	Aug. 7, '08		Sept. 31, '00	1 mo. 14 days.
*Bank Swallow	Aug. 8, '88 only.			
*Short-billed Marsh Wren	Aug. 10, '94		Sept. 20, '93	1 mo. 10 days.
*Bobolink	Aug. 15, '93	Aug. 31	Oct. 7, '96	1 mo. 25 days.
Marsh Hawk	Aug. 15, '96		April 29, '87	8 mos. 14 days.
Sharp-shinned Hawk	Aug. 17, '88		April 15, '95	7 mos. 29 days.
*Chestnut-sided Warbler	Aug. 17, '91	Aug. 30	Oct. 12, '91	1 mo. 25 days.
Migrant Shrike	Aug. 18, '88	Sept. 3	April 1, '15	7 mos. 14 days.
*Blue-winged Warbler	Aug. 20, '08		Sept. 4, '88	15 days.
*Sora	Aug. 21, '94		Oct. 30, '91	2 mos. 9 days.
*Osprey	Aug. 25, '87 only.			
*Blackburnian Warbler	Aug. 25, '87		Oct. 13, '91	1 mo. 18 days.(a)
*Golden-winged Warbler	Aug. 26, '86		Aug. 30, '93	4 days.
*Alder Flycatcher	Aug. 27, '98 only.			
*Wilson's Thrush	Aug. 28, '88		Sept. 18, '90	21 days.
*Cerulean Warbler	Aug. 29, '89		Sept. 17, '87	19 days.
*Baltimore Oriole	Aug. 31, '89		Sept. 17, '86	17 days.
*Pigeon Hawk	Sept. 2, '10		Oct. 2, '86	29 days.
Cowbird	Sept. 4, '90		April 29, '99	7 mos. 25 days.
*Brewster's Warbler	Sept. 6, '88 only.			
*Tree Swallow	Sept. 7, '88		Oct. 13, '88	1 mo. 6 days.
*Black-throated Green Warbler	Sept. 7, '91		Oct. 16, '93	1 mo. 9 days.
*Virginia Rail	Sept. 8, '96		Oct. 9, '93	1 mo. 1 day.
*Scarlet Tanager	Sept. 11, '86		Oct. 14, '91	1 mo. 3 days.
*Magnolia Warbler	Sept. 11, '87		Oct. 20, '90	1 mo. 9 days.
Red-breasted Nuthatch	Sept. 13, '86		April 10, '97	6 mos. 27 days.
Savannah Sparrow	Sept. 16, '87		May 9, '01	7 mos. 23 days.
Yellow Palm Warbler	Sept. 16, '87		May 1, '93	7 mos. 16 days.(b)
*Tennessee Warbler	Sept. 19, '89		Oct. 12, '87, '88	23 days.(a)
*Black-throated Blue Warbler	Sept. 20, '93		Oct. 23, '91	1 mo. 3 days.(c)
*Long-billed Marsh Wren	Sept. 20, '92		Oct. 19, '92	29 days.
Wilson's Snipe	Sept. 20, '93		April 28, '98	7 mos. 8 days.(d)
*House Wren	Sept. 21, '08		Oct. 16, '88	25 days.
*Black-poll Warbler	Sept. 24, '88	Oct. 3	Nov. 5, '86	1 mo. 11 days.
Bewick's Wren	Sept. 24, '05		April 3, '08	5 mos. 10 days.
Winter Wren	Sept. 26, '87	Oct. 9	April 23, '90	6 mos. 27 days.
*Olive-backed Thrush	Sept. 26, '87		Oct. 21, '85	25 days.
Yellow-bellied Sapsucker	Sept. 27, '87	Oct. 10	April 29, '87	7 mos. 2 days.
Meadowlark	Sept. 28, '89	Oct. 7	April 29, '87	7 mos. 1 day.(e)
Ruby-crowned Kinglet	Oct. 1, '88	Oct. 15	May 10, '10	7 mos. 9 days.
Song Sparrow	Oct. 2, '91	Oct. 10	April 28, '15	6 mos. 26 days.
*Gray-cheeked Thrush	Oct. 2, '88		Oct. 10, '90	8 days.
Brown Creeper	Oct. 3, '88	Oct. 10	April 19, '15	6 mos. 16 days.
*White-throated Sparrow	Oct. 4, '88	Oct. 14	May 18, '87	7 mos. 14 days.
Towhee	Oct. 4, '89	Oct. 11	May 6,'97,'07,'09	7 mos. 2 days.
Golden-crowned Kinglet	Oct. 7, '89	Oct. 15	April 19, '07	6 mos. 12 days.
Swamp Sparrow	Oct. 10, '88	Oct. 19	May 19, '93	7 mos. 9 days.
Myrtle Warbler	Oct. 11, '86, '89	Oct. 17	May 18, '93	7 mos. 6 days.
Vesper Sparrow	Oct. 11, '93	Oct. 19	May 11, '93	7 mos.
*Connecticut Warbler	Oct. 14, '84		Oct. 24, '96	10 days.(a)
*Rusty Blackbird	Oct. 17, '92	Oct. 25	Nov. 26, '86	1 mo. 9 days.(f)
Hermit Thrush	Oct. 16, '85	Oct. 21	April 29, '97	6 mos. 13 days.

FALL MIGRATION—*Continued.*

Name of Bird.	Earliest Arrival.	Average Arrival.	Latest Noted.	Length of Stay.
Fox Sparrow	Oct. 17, '93	Nov. 8	April 6, '15	5 mos. 20 days.
Pipit	Oct. 17, '87, '89	Oct. 22	April 6, '15	5 mos. 20 days.
Slate-colored Junco	Oct. 23, '86	Oct. 31	April 24, '07	6 mos. 1 day.
Purple Finch	Oct. 28, '89, '90		April 30, '90	6 mos. 2 days.
Purple Grackle	Oct. 28, '86		May 8, '86	6 mos. 10 days.(*g*)
Pine Siskin	Nov. 3, '86		May 11, '11	6 mos. 8 days.
*Cape May Warbler	Nov. 1, '11 only.			
Mallard	Nov. 6, '85, '95		April 7, '85	5 mos. 1 day.
Short-eared Owl	Nov. 8, '87		Feb. 9, '10	3 mos. 1 day.
*Bronzed Grackle	Nov. 5, '95, '96		Mar. 3, '93	3 mos. 26 days.
*Loon	Nov. 17, '87		Dec. 9, '96	1 mo. 22 days.
*Coot	Nov. 1, '91		Dec. 1, '09	1 mo.
*Pectoral Sandpiper	Nov. 15, '94 only.			
Black Duck	Dec. 1, '94		April 11, '95	4 mos. 10 days.
Green-winged Teal	Dec. 1, '88		April 13, '00	4 mos. 12 days.
Horned Lark	Dec. 7, '87		Feb. 20, '95	2 mos. 13 days.
Long-eared Owl	Dec. 15, '98		Feb. 24, '10	2 mos. 9 days.
Lapland Longspur	Jan. 13, '93		Feb. 20, '95	1 mo. 7 days.
Crossbill	Jan. 16, '97		Mar. 23, '85	2 mos. 7 days.(*i*)
Saw-whet Owl	Dec. 18, '94			
Prairie Horned Lark	Dec. 7, '87		Feb. 20, '95	2 mos. 13 days.
*Blue-winged Teal	Oct. 19, '88		Dec. 7, '93	1 mo. 19 days.
White-winged Crossbill	Feb. 23, '07 only.			

NOTES ON FALL MIGRATION

Unmarked species are winter visitors.

* Signifies species that are transients only.

a. Have so far been taken in fall only.

b. Yellow Palm Warbler is occasional in winter, but never common then, though sometimes so in the spring or fall migrations.

c. Black-throated Blue Warbler also once on November 19.

d. Wilson's Snipe is liable to occur at any time within the dates mentioned, but is rarely common except during the spring migration in March.

e. Meadowlark also taken on August 8.

f. Rusty Blackbird also once on December 16, 1889.

g. Purple Grackle observed twice in June (1 taken June 16, 1891).

h. American Crossbill also taken on May 9, 1907, and on June 5, 1887.

i. Blue-winged Teal probably occurs all winter, but is certainly more likely to appear during the migrations.

Besides the ducks in the above list, the following water-fowl have been taken or seen at Raleigh during the winter or the migrations: Baldpate, April 26, 1892, and November 12, 1891; Lesser Scaup Duck, January 2, 1895, March 10, 1891, March 28, 1908; also seen on June 1, 1900; Buffle-head, December 6, 1893; Hooded Merganser, November 24, 1888, January 31, 1908; Old Squaw, January 14, 1910; Shoveller, March 31, 1902, a pair seen; Horned Grebe, January 14, 1909.

III. SONG-PERIOD OF BIRDS AT RALEIGH

RECORDED BY C. S. BRIMLEY.

The song-periods assigned to the different species named below are based on data collected at Raleigh for one year only, viz.: June, 1908, to June, 1909, and therefore can only be considered approximations. It must also be remembered that spring is the main song-period of most North Carolina birds, and that when a species is here mentioned as singing at other periods the songs are usually then of less than ordinary duration and volume.

Name of Bird.	Period of Stay.	Song-period.
Bewick's Wren	Oct.-Mar.	Late Jan.-late Feb.
Blue Grosbeak	May-Sept.	May-July.(1)
Cardinal	Whole year	Mar.-July.(2)
Carolina Wren	Whole year	Whole year.
Catbird	April-Oct.	April-July.(3)
Chipping Sparrow	Mar.-Nov.	Mar.-Aug.
Field Sparrow	Whole year	Feb.-Aug.
Fox Sparrow	Nov.-Mar.	Nov.-Jan.
Hermit Thrush	Oct.-April	Heard once in November.
Hooded Warbler	April-Sept.	April-July.
Indigo Bunting	April-Oct.	April-July.(4)
Kentucky Warbler	April-Sept.	April-June.
Meadowlark	Oct.-April	Feb.-April.
Maryland Yellow-throat	Mar.-Oct.	Mar.-July.
Mockingbird	Whole year	Mar.-July and Sept.-Nov.
Orchard Oriole	April-Aug.	April-June.
Pine Warbler	Whole year	Jan.-May and Sept.(5)
Prairie Warbler	April-Sept.	April-June.
Parula Warbler	April-Oct.	April-July.
Red-eyed Vireo	April-Oct.	April-July.
Redstart	April-Oct.	April-July.
Robin	Whole year	Mar.-July.(6)
Ruby-crowned Kinglet	Oct.-April	Mar.-April.(7)
Song Sparrow	Oct.-April	Oct.-April.
Summer Tanager	April-Sept.	April-June.(8)
White-throated Sparrow	Oct.-May	Oct.-May.
White-eyed Vireo	Mar.-Oct.	Mar.-Oct.
Wood Thrush	April-Oct.	April-July.
Yellow Warbler	April-July	April-July.(9)
Yellow-breasted Chat	April-Sept.	April-July.
Yellow-throated Warbler	Mar.-Sept.	Mar.-June.
Yellow-throated Vireo	April-Sept.	April-Sept.

(1) Also once in August.
(2) Also heard twice in November and twice in January.
(3) Also once in August.
(4) Also once in August.
(5) Occasionally heard almost any time in the year.
(6) Occasionally in August.
(7) Also once in November.
(8) Once heard in each of the three months, July, August, and September.
(9) Occasional specimen is seen later than July.

The song-period given for the winter birds is marked by the sporadic singing of occasional birds throughout the period named, rather than by the species being in full song at any time.

GLOSSARY

Adult: Fully grown; possessing the fullest development of plumage.
Attenuate: Diminished to a sharp point, as a bill.
Basal, Base: That portion of the bill, or of a feather, etc., next to the body.
Belly: That part of the under surface between and behind the thighs; the abdomen.
Bend of Wing: The front end of the folded wing, covering the carpal joint.
Breast: The forward portion of the under surface, covering the thorax.
Cere: A covering of naked skin over the base of the upper mandible.
Chin: The region between the lower mandibles.
Commissure: The line where the upper and lower mandibles meet; gape.
Compressed: Flattened in a vertical plane.
Crested: With lengthened feathers on the head.
Conirostral: Having a conical bill, as a finch.
Crepuscular: Flying at dusk; fond of twilight.
Crissum: The region of the under tail-coverts.
Crown: The top of the head.
Culmen: The middle line of the top of upper mandible from base to tip.
Decurved: Curved downward.
Depressed: Flattened in a horizontal plane.
Emarginate: Slightly notched.
Extensible: Capable of being extended.
Falcate: Curved; scimitar-shaped.
Flanks: The sides, between the rump and the abdomen.
Frontal Processes: Swellings on the forehead, as in some ducks.
Gape: The opening of the mouth.
Gonys: The middle line of the lower mandible, where the two branches are joined.
Gular: Belonging to the throat: said of the pouches of pelicans, etc.
Immature: Not fully plumaged: said, usually, of birds less than a year old.
Lamellæ: The plates forming the edge of a duck's bill.
Lateral: On the side.
Lobate: With broad membranous flaps on each side: said of toes.
Lores, Loral Region: The part between the eyes and bill.
Mandibles: The upper and lower halves of the bill.
Mantle: A term applied to the wings and back of a bird, especially a gull or tern, with reference to a uniform area of color.
Measurements: The usual measurements given for birds are: Length, (L) measured from tip of bill to tip of tail; Wing, (W) measured from the bend of the wing to the tip of the longest quill; Tail, (T) measured from the base to the tip of the longest tail-quill; Tarsus, (TAR) is the distance from the base of the toes to the end of the tibia; Bill, (B) measured from base of feathers on forehead to tip of upper mandible, in a straight line.
Median: Belonging to the middle.
Nape: The back of the head, just below the occiput and above the neck.
Nasal Groove: A groove running forward from the nostril.
Nasal Tufts: Tufts of small feathers growing forward over the nostril.
Obtuse: Blunt.
Occiput: The back part of the top of the head, just above the nape.
Orbit: Relating to a space around the eye, as the *orbital ring.*
Pectinate: With teeth like a comb.
Primaries: The longest wing-quills, those growing from the hand- and finger-bones (the pinion) of the wing.
Recurved: Curved upwards.
Reticulate: Forming a network of small scales: said of the scales on a bird's tarsus.
Reversible: Capable of being turned back.
Rictal: Belonging to, or at, the gape.
Rump: The hinder part of a bird's back just in front of the upper tail-coverts.
Scapulars: The feathers growing from the shoulders.
Scutellate: Having broad, band-like plates across the whole front: said of a tarsus.
Secondaries: The smaller quils springing from the forearm.
Semipalmate: Webbed at base only.
Serrate: With sharp, saw-like edge.
Sides: The part which is beneath the wings and above the breast.
Sinuated: Irregularly or wavily curved.
Speculum: An oblong patch of metallic color on the secondaries, as in some ducks.
Sub-basal: Below the base.
Subulate: Awl-shaped.

Tail-coverts: The smaller feathers at the base of the large tail-feathers. Those on the top are called the upper tail-coverts; those underneath, the lower or under tail-coverts.

Tarsus: The portion of a bird's leg between the base of the toes and the heel, or so-called knee joint.

Tertiaries: The feathers growing from the joint of the wing next to the body.

Thigh: An incorrect name for the leg above the tarsus. This is really the lower half of the leg, and contains the tibia and fibula (bones), while the true thigh (femur) is within the body.

Throat: The surface of the gullet, between the chin and the breast.

Truncate: Cut squarely off at end.

Wing-coverts: The small feathers overlying the base of the wing-quills, both above and below.

GENERAL INDEX

(For common names of birds and scientific names of orders, families, genera, and species, see the following special indexes.)

A

Adickes, T. W., 22, 218, 296
Agricultural and Engineering College, 229
Alamance County, 177
Albemarle Sound, 21, 226
Alexander County, 255, 276, 297
Alleghanian Zone, 10, 11, 285
Alleghany Mountains, 249, 256
Allen, J. J., 93
Amadas, Captain, 1
American Museum of Natural History, 53, 110, 121, 281
Andrews, 163, 224, 228, 237, 243, 247, 274, 279, 283, 286, 287, 288, 290, 292, 293, 303, 314, 330, 334
Aquone, 248, 334
Armfield, Joseph, 221, 237
Asheville, 19, 30, 115, 173, 179, 225, 249, 283, 284, 288, 290, 305, 307, 314, 332
Atkinson, 42, 87, 96, 101, 106, 127, 243, 244, 251
Atlantic Coast, 22, 33, 35, 36, 62, 72, 86, 87, 94, 116, 122, 142, 144, 219, 235
Audubon, John James, 2, 5
Audubon Law, 9
Audubon Society, Objects of, 8
Audubon Society, The State, 7, 9, 10, 31, 34, 36, 37
Austro-riparian Zone, 11
Avery County, 75, 249, 271

B

Barlowe, Captain, 1
Barnes, 275
Barton, 93
Bartram, Wm., 5
Batchelder, Charles, 6
Battle, K. P., 157
Bay of Fundy, 28
Beaufort, 25, 30, 42, 43, 44, 87, 93, 100, 102, 106, 119, 122, 127, 133, 135, 137, 139, 143, 144, 164, 215, 226, 239, 240, 241, 249, 252, 256, 275, 287
Beaufort County, 196, 310
Beaufort Harbor, 44
Belhaven, 173
Belvidere, 334
Bendire, 173, 192, 194, 197, 217, 219
Bertie County, 114, 170, 186, 188, 191, 196, 221, 253, 259, 266, 275, 276, 281, 300, 305, 310, 322
Bigham, J. H., 50
Big Snowbird Mountains, 246, 323, 330
Bingham School, 157
Bird Distribution, 10-12
Birds of Prey, Description of, 159
Bishop, Dr. Louis B., 7, 22, 25, 28, 30, 32, 33, 35, 36, 37, 39, 46, 59, 62, 82, 84, 86, 96, 100, 101, 102, 110, 111, 112, 119, 122, 127, 132, 133, 135, 138, 140, 144, 148, 211, 224, 230, 231, 233, 235, 236, 239, 240, 241, 249, 251, 265, 318, 319
Black Mountain, 232, 286, 316, 320, 323, 325, 327, 330, 331, 332
Black Mountains, 163, 206, 229, 246
Bladen County, 39, 57, 58, 59, 78, 120, 177, 191, 252, 275, 295
Blantyre, 234, 237, 248, 279, 283, 286, 290, 296, 314, 334
Blowing Rock, 39, 170, 232, 234, 246, 249, 271, 286, 290, 292, 294, 307, 314, 331, 332, 334
Blue Ridge, West of, 116
Bodie Island, 119, 235, 318, 319
Bogue Beach, 87
Boone, 249
Boynton, C. L., 206, 210, 307, 323
Bowdish, 19, 33, 275, 276
Brewster, Wm., 6, 61, 78, 79, 115, 157, 191, 206, 210, 214, 228, 237, 247, 248, 271, 279, 280, 285, 290, 292, 293, 294, 297, 319, 320, 325, 330
Brickell, Dr. John, 4
Brimley, C. S., 7, 10, 65, 66, 67, 79, 81, 89, 96, 97, 106, 108, 111, 113, 148, 165, 172, 174, 186, 191, 197, 205, 210, 219, 221, 224, 228, 232, 234, 236, 237, 238, 239, 242, 244, 247, 249, 252, 259, 260, 262, 265, 266, 268, 271, 274, 276, 277, 278, 283, 286, 289, 290, 292, 293, 294, 298, 306, 310, 311, 314, 317, 320, 323, 327, 330, 331, 334

Brimley, H. H., 7, 18, 19, 22, 28, 39, 43, 47, 49, 55, 57, 58, 59, 63, 67, 73, 75, 77, 78, 89, 96, 97, 100, 103, 106, 107, 110, 111, 112, 113, 114, 118, 120, 130, 140, 144, 151, 155, 157, 168, 169, 172, 215, 218, 224, 236, 237, 238, 240, 261, 262, 276, 278, 279, 281, 288, 290, 295, 300, 306, 307, 310, 317, 327
Brinson, C. S., 73, 76
Bruner, Stephen C., 39, 43, 75, 115, 127, 133, 214, 229, 234, 237, 240, 243, 244, 249, 252, 255, 256, 271, 278, 283, 286, 290, 292, 293, 294, 297, 300, 306, 311, 320, 323, 327
Brunswick County, 5, 47, 49, 98, 100, 102, 103, 106, 107, 110, 139, 141, 144, 151, 175, 177, 191, 219, 225, 247, 252, 256, 266, 275
Buffalo's Pond, 95
Buncombe County, 7, 50, 57, 67, 69, 75, 76, 78, 79, 80, 81, 96, 97, 101, 105, 112, 115, 136, 141, 146, 157, 158, 161, 164, 165, 168, 169, 170, 173, 174, 175, 178, 179, 189, 190, 191, 199, 206, 208, 209, 210, 212, 213, 214, 219, 221, 224, 226, 228, 229, 231, 234, 236, 237, 238, 242, 243, 246, 247, 248, 249, 250, 252, 253, 257, 262, 267, 269, 271, 276, 278, 279, 280, 281, 282, 283, 288, 292, 293, 295, 296, 308, 314, 315, 320, 322, 325, 330
Burke County, 283
Burns, Frank L., 284
Busbee, J. L., 101, 243
Bush, Dr. C. C., 86
Bushnell, 214
Byrd, Col. Wm., 3

C

Cabot, Samuel, 280
Cabarrus County, 173
Cairns, J. S., 6, 19, 30, 50, 57, 66, 67, 69, 75, 76, 78, 79, 80, 81, 96, 97, 101, 112, 115, 136, 146, 157, 161, 164, 165, 168, 169, 170, 173, 174, 175, 179, 184, 186, 189, 190, 191, 206, 208, 209, 210, 212, 213, 219, 221, 224, 226, 228, 229, 232, 234, 236, 237, 238, 243, 248, 249, 252, 253, 254, 255, 260, 262, 267, 269, 271, 276, 278, 279, 280, 281, 282, 283, 285, 286, 288, 290, 292, 293, 295, 296, 306, 307, 308, 314, 316, 317, 318, 320, 322, 323, 324, 325, 330, 331, 332
Caldwell County, 249, 271, 293, 297
Campbelltown, (now Fayetteville), 5
Canadian Zone, 10, 11, 285
Cape Fear River, 2, 93, 144, 261
Cape Hatteras, 25, 42, 52, 54, 55, 58, 69, 81, 86, 89, 91, 102, 128, 132, 143, 196, 249, 262, 275, 298
Cape Lookout, 21, 22, 23, 24, 25, 28, 43, 44, 53, 119, 150, 151, 152
Caraleigh Mills, 179
Carolinian Zone, 11
Carteret County, 6, 28, 40, 49, 75, 98, 100, 102, 103, 105, 106, 112, 139, 144, 150, 151, 177, 179, 191, 218, 252, 275
Caswell County, 172
Catawba River, 50, 95
Catesby, Mark, 3
Chapel Hill, 7, 18, 19, 95, 96, 100, 154, 157, 161, 168, 169, 172, 174, 183, 191, 193, 197, 199, 211, 223, 224, 231, 243, 244, 247, 251, 254, 267, 283, 290, 292, 300, 311, 330, 332, 334
Chapman, Frank M., 142, 241, 258, 280, 303, 304.
Charleston Museum, 107
Charlotte, 191
Chatham County, 156
Cherokee County, 163, 170, 191, 203, 214, 224, 228, 237, 244, 246, 247, 249, 271, 276, 279, 283, 286, 303
Cherry, R. A., 170
Church's Island, 121, 128, 146
Clarendon (Cape Fear) River, 2, 5
Clark, Captain Haywood, 170
Clarke and Morgan, 114, 214
Cleelum, 284
Cloudland, 327
Coggins, 236
Coles, Russell J., 53
Collett, 163, 203, 219, 244, 247, 249, 286, 323, 330
Columbus County, 162
Cone's Lake, 39
Cooke, W. W., 82, 91, 93, 133, 146, 185, 242, 290, 296, 298
Coot's Gap, 247
Coover, J. H., 50
Core Sound, 54, 71, 73, 74, 83, 87, 106, 139, 171
Corncake Inlet, 150
Coues, Dr. Elliott, 6, 18, 32, 34, 35, 36, 39, 43, 46, 62, 65, 78, 96, 100, 112, 122, 131, 135, 141, 143, 144, 146, 164, 165, 220, 235, 239, 240, 241, 249, 262, 317, 319, 331

Cowee Mountain Range, 292
Cranberry, 241, 242, 244, 246, 247, 249
Crane Neck, 100, 102
"Crane Neck" Heronry, 98
Craggy Mountain, 189, 213, 271, 286, 290, 307, 332
Craven County, 19, 23, 49, 79, 98, 103, 113, 114, 158, 162, 175, 177, 179, 181, 191, 193, 200, 215, 221, 225, 247, 252, 260, 262, 275, 276, 281, 295, 300
Craven County Lakes, 275
Cumberland County, 39, 177
Currituck, 61, 63, 64, 67, 73, 76, 85, 87, 121, 135, 142
Currituck Beach, 121, 128, 146
Currituck County, 89, 121, 191, 235, 280, 281, 304
Currituck Shooting Club, 25, 57, 64
Currituck Sound, 23, 24, 25, 53, 57, 59, 63, 72, 73, 74, 75, 85, 87, 89, 91, 92, 116, 121, 171, 230, 281, 328

D

Dare County, 7, 18, 33, 40, 59, 82, 98, 111, 112, 119, 122, 140, 171, 177, 216, 235, 240, 275
Davidson County, 156, 177
Davis, James, 44
Davis, M. Leslie, 119, 269, 288, 332
Description of Birds of Prey, 159
Description of Shore-Birds, 116-118
Descriptive List of North Carolina Birds, 17-335
Dillsboro, 262
Double Spring Gap, 320, 323, 327
Dunlap, J. J., 18
Dunn, Wm., 75
Durham, 122, 206, 218, 223, 267, 292, 304, 306
Dutchman's Creek, 106, 110

E

Eaton, 26
Edenton, 185, 276
Edgecombe County, 266
Edgemont, 293, 297
Edwards, L. T., 158
Elizabeth City, 275
Esaw Indians, 2
Etheridge, J. B., 18, 25, 28, 135
Explanations of Keys and Descriptions, 13

F

Feild, A. L., 75, 191, 214, 247, 249, 286, 292, 297, 307, 320, 323, 327
Fenno, L. C., 64
Fisher, 182
Foley, Lieutenant, 24
Forst, J. R., 143
Forsyth County, 300
Fort Macon, 6, 18, 32, 35, 36, 39, 43, 46, 62, 65, 78, 87, 96, 101, 110, 122, 146, 165, 172, 235, 240, 241, 249, 262, 317, 319, 331
Franklin, 237, 247, 334
Franklin County, 92
French Broad River, 50, 249

G

Garner, 95
Gaskin, Wm. H., 44
Gates County, 188, 264, 275
Gatesville, 275, 334
Gault, 303
Geological and Economic Survey, State, 10
Gould, J. E., 276
Gould, N. E., 30, 119
Graham County, 246, 323, 330
Grandfather Mountain, 213, 286, 292, 307, 316, 320, 327
Granville County, 165, 184
Graybeard Mountain, 191
Great Lake, 49, 98, 103, 105, 175, 200, 275, 276, 281
Great Smoky Mountains, 320
Greensboro, 7, 9, 19, 21, 25, 32, 39, 46, 93, 112, 161, 179, 184, 187, 221, 225, 234, 237, 247, 252, 260, 267, 323, 334
Greensboro Female College, 174, 225
Greensboro, Mill Pond near, 93
Grimesland, 334
Grinnell, 87, 91
Griscom, Ludlow, 230, 232, 280, 281, 304, 328
Guilford College, 7, 19, 23, 46, 106, 141, 165, 192, 207, 247, 254, 267, 274, 328
Guilford County, 7, 59, 60, 106, 113, 125, 156, 165, 175, 177, 178, 179, 184, 193, 221, 260, 285, 322, 330
Gull Shoal Island, 54, 111, 319

H

Harbeck, Dr. E. V., 284
Hariot, Thomas, 1
Harker's Island, 106
Harnett County, 21
Harper, Francis, 100
Harvard, 286
Hatch, Dr., 142
Hatteras, 91, 110
Hatteras Inlet, 28
Hatteras Island, 171
Haynes, M. W., 112
Haywood County, 174, 210, 214, 246, 248, 249, 271, 314, 320, 323, 327
Hazard, Captain, 217
Henderson County, 248, 283
Hendersonville, 213, 248, 283, 294, 334
Highlands, 19, 191, 206, 210, 213, 228, 232, 246, 248, 252, 271, 279, 286, 290, 292, 294, 302, 303, 307, 314, 320, 323, 330
Hooker, C. R., 28
Hoopes, 236
Howell, 171
Hoy, Dr. P. R., 182
Huger, Miss M. E., 191, 303
Huntington, Dwight W., 80, 141
Hyde County, 40, 48, 103, 104, 184, 216, 222, 297, 315, 317

I

Iredell County, 282

J

Jackson County, 210, 214, 248, 279, 292
Jacksonville, 275
James River, 3
Jamestown, 113
Jeffries, W. A. and J. A., 262
Jennett, N. F., 33, 35
Joanna Bald Mountain, 191, 286, 292, 330, 334
Johnson, J. M., 230, 281, 328
Johnston County, 106, 173
Jones's Balsam Mountain, 325
Jones's Mill Pond, 49, 100, 102
Jordan, J. F., 39
Juniper Bay, 317

K

Kelford, 266
Keys and Descriptions, Explanations of, 13
Key to the Orders, 14-15
Kingsboro, 266
Kitty Hawk Bay, 81
Knott's Island, 121
Kobbe, Frederick Wm., 121, 135, 142, 144
Kopman, 247, 327, 332

L

Ladd, Dr. Samuel B., 286, 288
LaGrange, 221, 266, 295
Lake Ellis, 19, 59, 63, 67, 75, 77, 96, 97, 100, 111, 112, 113, 114, 130, 136, 172, 186, 193, 221, 252, 260, 262, 276, 281, 295, 300
Lake Head Island, 103, 105
Lake Kawana, 75
Lake Landing, 104
Lake Mattamuskeet, 1, 103, 105, 222, 262, 311
Lake Toxaway, 39, 271
Lake Worth, 75
Lane, "Tobe," 143
Latham, F. P., 173
Lawrence, R. B., 121
Lawson, John, 1, 2, 3, 4
Laurent, P., 249
Laurinburg, 266
Legged Lump Island, 35, 37
Le Moyne, 320
Lenoir, 293
Lenoir County, 221, 252, 295
Lewis, Dr. R. H., 10
Life Zones, 10-12
Lindley Park, 32
Linnæus, 69
Linville, 249, 294, 307
Little Lake, 276
Little Snowbird Mountains, 246
Lockwood's Folly, 93, 144, 151, 256, 266
Long Island, 74
Loomis, 213
Louisburg, 92
Lower Austral Region, 191, 197
Lower Austral Zone, 11, 275, 277

M

Mackey, George H., 84
MacNider, G. M., 224
Macon County, 191, 210, 214, 232, 237, 246, 247, 248, 271, 279, 292, 307
Madison County, 249
Manchester, 39
Manteo, 18, 122
Martin County, 219
Mattamuskeet Lake, 1, 103, 105, 222, 262, 311
Maynard, C. J., 42, 120, 135, 317
McAtee, W. L., 121, 128, 146
McDowell County, 247, 249, 297
McLaughlin, R. B., 7, 113, 267, 271, 282
Measurements of Birds, 14
Mecklenburg County, 19
Merriam, Dr. C. Hart, 24, 182, 217
Metcalf, Z. P., 170, 213, 325
Milburnie, 162
Miller Lump, 33
Mitchell County, 191, 242, 246, 249, 271, 327
Montreat, 249, 278
Moore County, 191
Moore, S. J., 87
Morehead City, 24, 26, 28, 43, 46, 73, 87
Morganton, 95, 255, 267, 271, 283, 284, 288, 289, 293, 314
Morrell, C. H., 212
Mount Airy, 260
Mount Gilead, 122
Mount Mitchell, 316, 323, 327
Moyle, Rev. S. T., 122

N

Nag's Head, 122
Narrows Island Shooting Club, 25
Nash County, 184
New Bern, 18, 22, 23, 57, 59, 67, 75, 85, 87, 106, 112, 143, 162, 177, 214, 224, 225, 262
New Hanover County, 47, 111, 139, 150, 191, 247, 256
New Inlet, 81, 108, 240
Neuse River, 18, 22, 23, 162, 205, 295
New River, 73, 83
Nichols, John T., 53, 228
North River, 94, 102, 139, 144
Nourve, Mr., 121

O

Oberholser, 236
Ocracoke, 34, 38, 39, 52, 53, 90, 151, 249
Old Fort, 228, 297
Old Richmond, 300
Old Topsail Inlet, 319
Onslow County, 73, 83, 98, 106, 139, 150, 275
Orange County, 7, 114, 165, 168, 169, 172, 276, 311, 315
Oregon Inlet, 82
Oriental, 233
Ornithological Historical Sketch, 1-6
Ornithological Work, Recent, 6-7
Orton, 275
Orton Plantation, 46, 98, 100, 175, 218
Orton Pond, 47, 49, 102, 144, 175, 225

P

Pamlico County, 177
Pamlico Sound, 8, 20, 21, 31, 34, 36, 39, 45, 52, 53, 54, 57, 73, 83, 89, 90, 92, 108, 111, 120, 151, 319
Pamunkey Island, 230, 280, 281, 328
Parmele, 219
Pasquotank County, 275
Patterson, 249
Pea Island, 7, 22, 25, 28, 30, 32, 35, 36, 37, 39, 46, 62, 66, 78, 82, 84, 86, 96, 100, 101, 102, 110, 111, 112, 127, 132, 133, 135, 137, 139, 140, 144, 148, 211, 224, 230, 231, 233, 235, 236, 239, 240, 241, 249, 261, 265, 318, 319
Pearson, T. Gilbert, 19, 21, 22, 23, 24, 25, 26, 30, 32, 34, 39, 41, 43, 44, 46, 47, 48, 49, 53, 57, 59, 65, 70, 75, 78, 81, 82, 86, 89, 91, 93, 94, 96, 98, 100, 102, 103, 104, 105, 106, 107, 108, 110, 111, 112, 113, 116, 125, 128, 133, 139, 141, 144, 150, 151, 154, 159, 161, 162, 165, 168, 169, 171, 172, 173, 174, 175, 178, 179, 183, 187, 188, 191, 192, 193, 195, 200, 207, 211, 215, 216, 219, 221, 224, 233, 240, 244, 247, 249, 251, 252, 254, 256, 261, 262, 263, 266, 274, 275, 278, 281, 285, 287, 290, 292, 293, 297, 298, 307, 311, 313, 316, 319, 322, 323, 328, 330, 331, 332, 334
Pender County, 171
Perquimans County, 334
Philadelphia Academy of Natural Science, 6, 185
Philipp, P. B., 114, 275, 276
Pilot Mountain, 173

Piner, Augustine, 24, 26, 43, 46
Pitt County, 252, 334
Plymouth, 226, 240
Poplar Branch, 89
Post, Wm. S., 23, 91, 93
Post, W. T., 57
Poteat, Dr. W. L., 334
Poyner, T. J., 87
Primrose, Owen, 106
Primrose, W. S., 146
Pungo Bluff, 317

R

Raleigh, 7, 11, 19, 21, 39, 43, 46, 50, 53, 59, 64, 65, 67, 75, 80, 89, 95, 96, 97, 98, 100, 106, 107, 108, 111, 113, 114, 115, 119, 127, 129, 130, 131, 133, 136, 138, 140, 141, 146, 148, 157, 169, 171, 173, 174, 175, 179, 180, 181, 184, 186, 188, 19*, 195, 196, 197, 198, 199, 200, 203, 205, 206, 209, 211, 212, 214, 219, 220, 222, 223, 224, 225, 226, 229, 231, 232, 234, 235, 236, 237, 238, 239, 241, 242, 243, 244, 247, 248, 250, 252, 254, 260, 262, 263, 264, 267, 268, 270, 271, 272, 274, 275, 277, 278, 279, 281, 282, 283, 284, 285, 286, 287, 288, 290, 291, 292, 293, 294, 295, 296, 297, 298, 300, 302, 304, 305, 306, 307, 308, 310, 314, 317, 318, 319, 322, 327, 328, 330, 331, 332, 333, 334, 335
Randolph County, 156, 177
Recent Ornithological Work, 6-7
Reed, C. A., 256
Rhoads, 191, 206, 210, 213, 229, 231, 286, 292, 294, 307, 316, 320, 323, 330
Richmond, Charles W., 233
Ridgway, 236
Roan Mountain, 124, 191, 206, 210, 213, 214, 229, 231, 246, 286, 290, 292, 294, 307, 316, 320, 323, 327, 330
Roanoke Island, 1, 18, 92, 122, 164, 171
Roanoke River, 226
Roanoke and Tar River Gun Club, 170
Roberson, J. R., 82
Robertson, 265
Rockingham County, 252
Royal Shoal Island, 31, 34, 35, 37, 40, 151

S

Sanford, 72, 95, 138
Sapona River, 2
Sapphire, 334
Satula Mountain, 252
Schiefelin, Eugene, 216
Scotland County, 266
Seasonal Distribution, 12
Seeman, 218, 306
Sennett, George B., 124, 242
Seton, Ernest, 303
Shackelford Banks, 143, 287
Shallotte, 102
Sherman, 59, 191, 228, 234, 237, 249, 252, 261, 266, 271, 279, 284, 290, 292, 294, 295, 310, 316, 327, 330, 334
Shore-Birds, Description of, 116
Sloan's Ferry, 50
Smithwick, 42, 79, 105, 187, 188, 191, 221, 226, 239, 240, 253, 266, 269, 281, 295, 300, 310, 317, 322, 332
Sohier, W., 91
Speed, 170
Sprunt, James, 100
Southern Pines, 212, 247, 334
Southport, 5, 106, 132, 144, 151, 219, 319
South River, 75
State Audubon Society, The, 7-9
State Museum, 18, 25, 28, 39, 46, 53, 76, 78, 79, 81, 87, 93, 94, 106, 114, 119, 135, 159, 170, 171, 173, 177, 184, 214, 230, 253, 303
State Normal and Industrial College, 7, 25, 46, 48, 187
Statesville, 7, 113, 188, 199, 267, 271, 300, 314
State University, 154, 157, 193, 330
Stokes County, 244, 252
Stone, W. E., 184
Stump Sound, 150
Sunburst, 174, 314
Surry County, 173, 260
Swain County, 170, 214
Swan Island Club, 76, 91
Swannanoa, 249

T

Tarboro, 112
Tar River, 92
Taylorsville, 255, 294, 297
Tennessee River, 98
Test Farm, 266
Thayer, Gerald H., 28, 119, 280
Thayer, J. E., 25, 82
Thomasville, 177
Tom Branch, 46, 102
Topography of a Bird, 14

Topton, 214
Toxaway, 294, 334
Transition Zone, 10
Transylvania County, 39, 234, 237, 248, 271, 279, 283
Trent River, 87
Trinity College, 122
Tryon, 11, 213
Tuckaseegee River, 262
Tuskwitty Range, 246
Tyrrell County, 124

U

United States National Museum, 241
Upper Austral Zone, 11

V

Valle Crucis, 249, 261
Van Dyke, 138, 141

W

Waccamaw Lake, 162
Waccamaw River, 107
Wake County, 81, 95, 113, 115, 154, 162, 165, 168, 169, 173, 177, 178, 179, 181, 191, 193, 194, 209, 219, 242, 271, 275, 276, 281, 305, 315
Wakefield, 271, 275
Wake Forest, 334
Walnut Creek, 106, 113, 140
Warren, 303
Warrenton, 267
Watauga County, 170, 232, 246, 249, 261, 271
Waterlily, 62, 75
Wayah Bald, 246
Wayne, Arthur T., 95, 107, 110, 111, 214, 255, 267, 271, 277, 284, 288, 289, 293
Waynesville, 325
Weaverville, 6, 19, 66, 69, 112, 184, 200, 206, 219, 224, 226, 231, 236, 237, 238, 248, 250, 255, 260, 279, 281, 283, 285, 287, 291, 294, 297, 306, 307, 314, 317, 318, 328, 331, 332, 333
Webb, W. M., 73
White, Jasper B., 62, 75, 121, 128
White Lake, 19, 39, 57, 58, 59, 78, 120, 172, 215, 275, 295
Whitlock, 121, 135, 142
Widmann, Otto, 277
Willis, James, 87
Wilmington, 5, 6, 46, 93, 101, 111, 144, 170, 218, 260
Wilson (Town), 158
Wilson, Alexander, 5
Wilson, Bainbridge, 233
Wilson, Mrs. Donald, 163, 224, 228, 243, 279, 286, 293, 303
Woodward, P. L., 159
Wrightsville, 260, 261
Wrightsville Sound, 93, 144
Wysocking Bay, 48

Y

Yancey County, 286

INDEX OF COMMON NAMES

(For description of species refer to pages represented by black-face figures)

Acadian Flycatcher, 207, **208**
Albatrosses, 15
Alder Flycatcher, 207, **209**
American Quail, **152**
  Vultures, **159**
  Widgeon, 63

Bachman's Sparrow, 11, **247**
  Warbler, **277**
Baird's Sandpiper, 131
Bald Eagle, 2, 4, 116, **171**, 172, 173, 175
Baldpate, 54, 63, **64**
Baltimore Oriole, 11, 12, 222, **223**
Bank Swallow, **262**, 263
Barnacle Goose, 88, **91**
Barn Owl, 159, **177**
  Swallow, 11, 13, **260**, 261
Barred Owl, **180**, 181
    Florida, **180**
Barrow's Golden-eye, 77, **79**
Bartramian Sandpiper, **140**
Bay-breasted Warbler, 283, 287, **290**
Bay-winged Bunting, **234**
Bee-martin, 172, **203**
Beetle-head, 117
Belted Kingfisher, **187**
Bewick's Wren, 10, 313, **314**, 315
Bicknell's Thrush, 329, **331**
Big Blackhead, **73**, 74
  Indigo, 255
Birch Warbler, 280
Bird, Butcher, 267
  Frigate, 53
  of Freedom, 172
  of Washington, 2
  Peabody, 243
  Sweet-Canada, 243
Birds, Diving, **17**
  Gallinaceous, **152**
  Man-o'war, 12, 45, **52**, 53
  Marsh, 106
  of Prey, 159
  Perching, 16, **201**
  Reed, 217
  Shore, 116
  Surf, **150**
  Tropic, 45

A

Ani, 12, **185**
Arctic Tern, 33
Audubon's Shearwater, 41, **42**, 43
Auk, Razor-billed, **23**, 24
Auks, 15, 17, **22**
Avocets, 118, **121**, 122

B

Bittern, **95**
  Cory's Least, 97
  Least, **96**, 97
Bitterns, 93, 95
Black and White Creeper, 273
  and White Warbler, **273**, 274, 276, 291, 293
  Duck, 2, 54, 58, 59, **60**, 61, 62, 68, 76
  Eagle, 4
  Guillemot, 23
  Martin, 259
  Rail, **113**
  Skimmer, 11, **40**
  Snowbird, 246
  Tern, **39**, 146
  Vulture, 11, 160, **161**
  Witch, 185
Black-backed Gull, Great, 27, 28
Black-bellied Plover, 2, 118, **145**, 146
Black-billed Cuckoo, 185, **186**, 187
Blackbird, Crow, 216, 224, 225
  Red-winged, **219**, 220
  Rusty, **224**
  Savannah, 185
Blackbirds, 16, 202, **216**, 283
Blackburnian Warbler, 10, **291**, 292
Blackcap, Wilson's, **306**
Black-crowned Night Heron, **105**
Blackhead, 73, 74, 75, 76, 77, 90
  Big, **73**, 74
  Little, 73, 74, 75, 76, 77
Black-necked Stilt, **122**, 123
Black-poll Warbler, 283, 287, **290**, 291
Black-throated Blue Warbler, 282, 283, **285**, 286
  Bunting, 256
  Green Warbler, 10, 11, 283, **294**
Bluebill, 75
Bluebird, **329**, **334**, 335

Blue Crane, 98
Darter, 165
Goose, 85, **87**
Grosbeak, 11, **254**, 255
Heron, Great, 97, 98
Heron, Little, 11, 102, 103, 118
Jay, **213**
Peter, 115
Warbler, Black-throated, 282, 283, **285**, 286
Yellow-backed Warbler, 281
Blue-gray Gnatcatcher, **328**
Blue-headed Vireo, 269, **270**, 271
Blue-tailed Hawk, 165
Blue-winged Teal, **66**
Warbler, 277, **278**, 279
Boat-tailed Grackle, 11, 117, **226**
Bobolink, 159, **217**, 218
Bob-whites, 15, **152**, 153
Bonaparte's Gull, 27, **31**, 32
Boobies, 85
Booby, 45, 46
Brant, 54, 55, 88, **89**, 90, 91
White, 86, 87
Breakhorn, 57
Brewster's Warbler, 279
Broadbill, 73, 74, 76
Broad-winged Hawk, 167, **168**, 169
Bronzed Grackle, **226**
Brown Creeper, 10, **319**, 320
Pelican, 4, 49, **50**, 51, 52
Thrasher, **311**, 312
Thrush, 311
Brown-headed Nuthatch, 11, 309, 321, **323**
Brünnich's Murre, **23**
Buff-breasted Sandpiper, **141**
Bufflehead, 54, **79**
Bullbat, 8, 198, **199**
Bunting, Bay-winged, 234
Black-throated, 256
Indigo, **255**
Lapland, 234
Painted, 11, 255, **256**
Snow, **233**
Bush Sparrow, 245
Butcher Bird, 267
Buzzard, 160, 161, 166
South Carolina, 161
Turkey, 160

C

Cabot's Tern, 33, **35**
Cairns's Warbler, 7, 10, 282, **285**, 286
California Condor, 159
Canada Goose, 54, 87, **88**, 89
Warbler, 10, 305, **307**
Canary, Wild, 231
Canvasback, 54, 64, 70, **71**, 72, 73, 85, 90
Cape May Warbler, **283**, 284
Caracaras, **173**
Cardinal, **252**, 253, 254, 311
Carolina Chickadee, 11, **325**
Cuckoo, 4
Junco, 10, 245, **246**
Paroquet, 1, 184
Snowbird, 6, 246
Wren, 11, 12, 302, **313**, 314
Caspian Tern, **33**
Catbird, 12, 222, **310**, 311
Cat Owl, 183
Cedar-bird, 159, 264
Cedar Waxwing, **264**
Cerulean Warbler, 283, **288**, 289, 290
Chat, Yellow-breasted, 272, **304**, 305
Cherry-bird, 264
Chestnut-sided Warbler, 10, 283, **289**
Chewink, 251
Chickadee, 10, 321, **325**
Black-capped, 10
Carolina, 11, **325**
Chicken Hawk, **165**, 166, 167
Chickens, 152, 182
Mother Cary's, 44
Sea, 117, 118, 131, 132
Chimney Swallow, **199**
Swift, **199**, 200
Chipping Sparrow, 228, **244**, 245, 266
Chuck-will's-widow, 11, 196, 197, 198
Cinnamon Teal, 173
Clam-bird, 151
Clapper Rail, 11, 107, **108**, 109, 110
Wayne's, 107, **110**
Clay-colored Sparrow, 243, 251
Cliff Swallow, **260**
Common Loon, **20**, 21, 22
Tern, 33, **36**
Condor, 159
California, 159
Connecticut Warbler, 146, 301, **302**, 303
Cooper's Hawk, **165**, 166
Coot, **115**, 116
Sea, 83
Coots, 2, **107**, 111, 116

Cormorant, Double-crested, **48**, 49
Florida, 11, **49**
Cormorants, 11, 15, 45, **47**, 48, 49, 105
Cory's Least Bittern, 97
Shearwater, 41, **42**
Cowbird, 185, **219**
Crane, Blue, 98
Little White, 103
Sandhill, 2, 106, 107
Savannah, 106
Cranes, 1, 2, 15, 93, 97, 106
Creek Duck, 63
Creeper, Black and White, 273
Brown, 10, **319**, 320
Creepers, 202, 319
Crested Flycatcher, **204**
Crossbill, 10, **229**
White-winged, **229**, 230
Crow, **215**
Blackbird, 216, 224, 225
Fish, 11, 103, 117, 213, **216**
Crows, 179, 202, 204, **212**, 213, **215**, 216
Crying-bird, 107
Cuckoo, 4, **184**, **185**, 186
Black-billed, 185, **186**, 187
Carolina, 4
European, 185
Yellow-billed, **185**, 186
Cuckoos, 15, **184**, 185
Curlew, Eskimo, 143
Hudsonian, 117, 143, **144**
Long-billed, **143**
Pink, 93
Stone, 94
Curlews, 123

D

Darter, Blue, **165**
Darters, 45, 46
Dickcissel, 256
Didapper, 19
Diver, Great Northern, 20, 21
Diving Birds, 17, 25
Double-crested Cormorant, **48**, 49
Dove, Ground, **158**
Mourning, 12, **157**, 158, 159
Stock, 1
Doves, 15, 156
Dovekie, **24**
Dowitcher, 2, **126**, 127
Long-billed, **127**
Downy Woodpecker, 10, 189, **190**, 191
Southern, 11, 189, **190**
Duck, Black, 2, 53, 54, 58, 59, **60**, 61, 62, 68, 76
Creek, 63
Fish, 55
Duck, Fisherman, 57, 58
Fulvous Tree, **91**
Gray, 62
Hawk, **173**
Lesser Scaup, 54, 70, 74, 77
Raft, 54, 73
Red-legged, 61
Ring-necked, 70, **76**, 77
Ruddy, 54, **84**, 85
Saw, 57
Scaup, 54, 70, **73**, 74
Summer, **69**
Winter, 61
Wood, 53, 62, **69**, 70, 76
Ducks, 15, 25, 53, 55, 58, 82
Fish, 55
Old Squaw, 81
River, 54, 56
Sea, 54, 56
Tree, 55

E

Eagle, Bald, 2, 4, 116, **171**, 172, 173, 175
Black, 4
Golden, 10, **170**, 171
Gray, 2, 4
Eagles, 4, 159, 160, **162**, 183
Eaves Swallow, 260
Egret, 11, **99**, 100
Snowy, 11, **100**, 101
Eider, 82
King, **81**, 82
English Pheasant, 156
Ring-necked Pheasant, **156**
Snipe, 126
Sparrow, 12, 216, **232**, 256
Eskimo Curlew, 143
European Cuckoo, 185
House Sparrow, 232
Teal, 64
Widgeon, **63**, 64
Woodcock, 125

Falcons, Peregrine, 173
Falcons, 1, 2, 159, 162, **173**
Field Lark, 210, 220
Sparrow, 243, **245**
Finch, Grass, 234
Purple, **227**, 228
Finches, 16, 216, **226**, 255
Fish Crow, 11, 103, 117, 213, **216**
Duck, 55
Fisherman Duck, 57, 58
Fish Hawk, 162, 175
Flicker, 70, 165, 182, 195, 196
Northern, 195
Florida Barred Owl, 180
Cormorant, 11, **49**
Gallinule, **114**, 115
Screech Owl, 182
Yellow-throat, 304
Flycatcher, Acadian, 207, **208**
Alder, 207, **209**

F

Flycatcher, Crested, **204**
Fork-tailed, 202
Green-crested, 207
Least, 11, 207, 209, 210
Olive-sided, 11, **205**, 206
Scissor-tailed, 202
Traill's, 209
Yellow-bellied, **207**
Fly-catching Warbler, 306
Flycatchers, 16, 201, **202**, 206, 207
Tyrant, **202**
Flying Colt, 141
Fly-up-the-Creek, 104
Fork-tailed Flycatcher, 202
Forster's Tern, 33, **35**
Fox Sparrow, **251**
French Mockingbird, 267
Frigate Bird, **53**
Fulmars, 15, **41**
Fulvous Tree Duck, **91**

G

Gadwall, 54, **62**
Gallinaceous Birds, **152**
Gallinule, Florida, **114**, 115
Purple, **113**
Gallinules, 2, 15, **107**
Gannet, 15, **45**, 46
Geese, 1, 15, 53, 54, 55, 82, **85**
Glaucous Gull, **27**
Glossy Ibis, 94
Gnatcatcher, Blue-gray, **328**
Gnatcatchers, 202, **326**
Goatsuckers, 16, **196**
Godwit, Hudsonian, 134, **135**
Marbled, **134**, 135
Golden-crowned Kinglet, 10, **326**, 327
Thrush, 299
Golden Eagle, 10, **170**, 171
Plover, 2, 116, **145**, 146, 147
Golden-eye, **77**, 78
Barrow's, 77, **79**
Golden-winged Warbler, 10, 277, **278**, 279
Goldfinch, 11, **230**, 231
Good-God, 193
Goosander, 57
Goose, Barnacle, 88, **91**
Blue, 85, **87**
Canada, 54, 87, **88**, 89
Greater Snow, 85, **86**
Snow, **85**, 87, 93
White-fronted, **87**, 88
Wild, 53, 89
Goshawk, 164
Grackle, Boat-tailed, 11, 117, **226**
Bronzed, 225, **226**
Purple, **225**
Grackles, 224
Grass Finch, 234
Grasshopper Sparrow, **236**, 237
Grayback, 127
Gray-cheeked Thrush, 329, **331**, 332
Gray Duck, 62
Eagle, 2, 4,
Kingbird, 203
Great Black-backed Gull, 27, 28
Blue Heron, **97**, 98
Horned Owl, 178, 179, **182**, 183, 184
Northern Diver, 20, 21
Greater Shearwater, 41, **42**
Snow Goose, **85**, 87, 93
Yellow-legs, 118, **136**, 137
Grebe, Holboell's, **17**, 18
Horned, **18**, 19
Pied-billed, **19**
Grebes, 15, **17**, 19
Green-crested Flycatcher, 207
Green Heron, 104
Warbler, Black-throated, 10, 11, 283, **294**
Green-winged Teal, 64, **65**, 66
Grosbeak, Blue, 11, **254**, 255
Rose-breasted, 11, **253**, 254
Ground Dove, **158**
Sparrow, 235, 245

Grouse, 9, 15, 152, **153**
Ruffed, 11, **153**, 154
Guillemot, Black, 23
Gull-billed Tern, **32**, 33
Gull, Bonaparte's 27, **31**, 32
Glaucous, **27**

Hairyhead, 59
Hairy Woodpecker, 10, **189**, 190, 191
Southern, 11, **189**
Hangers, 267
Hawk, Blue-tailed, **165**
Broad-winged, 167, **168**, 169
Chicken, **165**, 166, 167
Cooper's, **165**, 166
Duck, **173**
Fish, 162, 175
Hen, **167**
Marsh, 12, **164**
Pigeon, **173**, 174
Rabbit, **164**
Red-shouldered, **167**, 168, 213
Red-tailed, **167**
Rough-legged, **169**, 170
Sharp-shinned, **165**, 166
Snake, 162
Sparrow, 173, **174**
Swainson's, 167, **168**
Hawks, 1, 15, 159, **162**, 183, 204
Hedge Sparrow, 4
Hell-diver, 19
Hen Hawk, **167**
Henslow's Sparrow, 237, **238**

Ibises, 15, **93**, 96
Ibis, Glossy, 94
White, 12, **93**, 94, 95
Wood, 93, **95**
Indian Hen, 104

Jackdaw, 226
Jack Snipe, 126, 130
Jaeger, Long-tailed, 25, 26
Parasitic, 25, **26**
Pomarine, 25, 26
Jaegers, 15, **25**, 26
Jaybird, 213
Jay, Blue, **213**

Kentucky Warbler, 11, 301, **302**
Killdeer, 147, 309

Gull, Great Black-backed, 27, **28**
Herring, 27, **28**, 29, 30
Laughing, 27, **30**, 31, 118
Ring-billed, 27, **30**
Gulls, 15, 25, 26, **27**, 29, 117

H

Hermit Thrush, 329, **332**, 333
Heron, Black-crowned Night, **105**
Great Blue, **97**, 98
Green, **104**
Little Blue, 11, **102**, 103, 118
Louisiana, 11, 101, 102, 103, 118
Night, 95, 105
Snowy, 103, 118
Yellow-crowned Night, **106**
Herons, 1, 15, **93**, 95, 103
Herring Gull, 27, **28**, 29, 30
Hobbie, 2
Holboell's Grebe, **17**, 18
Hooded Merganser, **58**
Warbler, 11, **305**, 306
Hoot Owl, **180**
Horned Grebe, **18**, 19
Lark, **211**, 212
Lark, Prairie, 211, **212**
Owl, Great, 178, 179, **182**, 183, 184
House Sparrow, European, 232
Wren, 313, **315**, 316
Hudsonian Curlew, 117, 143, **144**
Godwit, 134, **135**
Hummingbird, Ruby-throated, **200**, 201, 328
Hummingbirds, 5, 16, 196, **200**

I

Indigo, 255, 256
Big, 255
Bunting, **255**, 256
Ipswich Sparrow, 230, **235**
Ivory-billed Woodpecker, 5, 188, 192

J

Jays, 16, 202, **212**
Joerigger, 251
Joree, 251
Joreeper, 251
Junco, 12, 227
Carolina, 10, 245, **246**
Slate-colored, **245**, 246, 247

K

Kingbird, 12, 172, 202, **203**, 204
Gray, 203

King Eider, **81**, 82
Rail, **107**, 108, 110, 114
Kingfisher, Belted, **187**
Kingfishers, 15, **184**, 185, **187**, 188, 264
Kinglet, Golden-crowned, **326**, 327
Ruby-crowned, 326, **327**
Kinglets, 202, **326**
Kirtland's Warbler, 283, 298
Kite, Mississippi, **163**
Swallow-tailed, **162**
White-tailed, 163
Kites, 159, **162**
Knock Molly, 81
Knot, 117, **128**
Kricker, 117

L

Lady of the Waters, 102
Lamellirostral Swimmers, **53**
Lapland Bunting, 234
Longspur, **233**, 234
Lapwing, 2
Lark, Field, 210, 220
Horned, **211**, 212
Prairie Horned, 211, **212**
Sparrow, **241**, 242
Larks, 201, **210**
Laughing Gull, 27, **30**, 31, 118
Lawrence's Warbler, 279
Leach's Petrel, 44
Least Bittern, **96**, 97
Cory's, 97
Flycatcher, 11, 207, **209**, 210
Sandpiper, 118, 129, **130**, 131, 132, 133
Tern, 33, **37**, 38, 118
Leconte's Sparrow, 237, **238**, 239
Lesser Scaup Duck, 54, 70, 73, **74**, 75, 77, 78
Yellow-legs, 118, 137
Lettuce-Bird, 231
Limpkin, 107
Lincoln's Sparrow, 248, **249**
Linnet, Redpoll, 230
Little Blackheads, 73, 74, 75, **76**, 77
Blue Heron, 11, **102**, 103, 118
Scaup, 75
Striker, 37
White Crane, 103
Log-cock, 193
Loggerhead Shrike, 265, **266**, 267
Long-billed Curlew, **143**
Dowitcher, **127**
Marsh Wren, **318**, 319
Water-Thrush, 301
Long-eared Owl, **178**, 179
Longspur, Lapland, **233**
Long-tailed Jaeger, 25, 26
Long Tom, 98
Long-winged Swimmers, **25**, 41
Loon, **20**, 21
Common, 21, 22
Red-throated, 18, 20, **21**, 22
War, 20
Loons, 15, 17, 20, 21
Louisiana Heron, 11, **101**, 102, 103, 118
Water-Thrush, 11, 276, 299, **300**, 301

M

Macgillivray's Seaside Sparrow, 238, **241**
Magnolia Warbler, 283, **287**, 288, 306
Mallard, 53, 54, **59**, 60, 61, 62, 63, 65, 67
Man-o'-war-bird, 12, 45, **52**, 53
Marbled Godwit, **134**, 135
Marian's Marsh Wren, 11, 318, **319**
Marsh Birds, 106
Hawk, 12, **164**
Wren, 312, 317
Long-billed, **318**, 319
Marian's, 11, 318, **319**
Short-billed, **317**
Worthington's, 318, 319
Martin, Black, 259
Purple, 12, 13, **259**
Maryland Yellow-throat, **303**, 304
Meadowlark, 210, **220**, 221
Southern, **221**
Merganser, **56**
Hooded, **58**
North American, 59
Red-breasted, 56, **57**, 58
Mergansers, 54, 57, 58, 59
Merlin, 2
Merlin-baws, 1
Migrant Shrike, 265, **267**
Mississippi Kite, **163**
Mockingbird, 11, **309**, 310, 312
French, 267
Rusty, 311
Mockingbirds, 202, **309**
Mocking Wren, 314
Monkey-faced Owl, 177
Moorehen, 2
Mother Cary's Chickens, 44
Mountain Pheasant, **155**

Mountain, Solitary Vireo, 269, 271
Vireo, **271**
Mourning Dove, 12, **157**, 158, 159
Warbler, 301, **303**

Nashville Warbler, 277, **279**, 280
Nelson's Sparrow, 238, **239**, 240
Nighthawk, 8, 39, 198, **199**
Night Heron, 95, 105
Black-crowned, **105**
Yellow-crowned, **106**
Nonpareil, 11, 222, **256**
North American Mergansers, 59
North Carolina Wood Warblers, 298
Northern Diver, Great, 20, 21

Old Cranky, 98
Old-Squaw, 55, 81
Old Squaw Ducks, 81
Old World Warblers, 202
Olive-backed Thrush, 329, 331, 332
Olive-sided Flycatcher, 11, **205**, 206
Orange-crowned Warbler, 277, **280**
Orchard Oriole, 11, **222**, 223
Oriole, Baltimore, 12, 222, **223**
Orchard, 11, **222**, 223
Orioles, 16, 202, **216**
Osprey, 11, 162, **175**, 176, 177, 225
Ospreys, 159, 162, **175**
Oven-bird, **299**
Owl, Barn, 159, **177**

Painted Bunting, 11, 255, **256**
Palm Warbler, 283, **296**
Yellow, 283, **296**, 297
Parasitic, Jaeger, 25, **26**
Paroquet, Carolina, 1, 184
Paroquets, 3
Parrots, 1, 15, 184
Partridge, 1, **152**
Parula Warbler, **281**, 282, 291
Northern, **282**
Passenger Pigeon, 2, 157
Peabody Bird, 243
Pectoral Sandpiper, **129**
Peep, 131
Peeps, 117, 148
Pelican, Brown, 4, 49, **50**, 51
White, 49, **50**
Pelicans, 4, 15, 45, **49**
Perching Birds, 16, **201**
Murre, Brünnich's, **23**
Murres, **22**, 23
Myrtle Warbler, 266, 283, **287**

N

Northern, Flicker, 195
Parula Warbler, **282**
Phalarope, **119**, 120
Pileated Woodpecker, 192
Raven, **213**, 214
Shrike, **265**
Nuthatch, Brown-headed, 11, 309, 321, **323**
Red-breasted, 10, 321, 322
White-breasted, 274, **321**, 322
Nuthatches, 202, **321**

O

Owl, Barred, **180**
Cat, 183
Florida Barred, 180
Florida Screech, 182
Great Horned, 178, 179, **182**, 183, 184
Hoot, **180**
Long-eared, **178**, 179
Monkey-faced, 177
Saw-whet, **181**
Screech, 178, **181**, 182
Short-eared, 178, **179**, 180
Snowy, **184**
Owls, 15, 159, **178**
Oyster-catcher, 11, 117, 118, **151**

P

Peregrine Falcon, 173
Petrel, Leach's, 44
Wilson's, **43**, 44
Petrels, 15, 41
Pewee, **205**
Wood, **206**, 207, 209
Phalarope, Northern, **119**, 120
Red, **118**, 119
Wilson's, **120**, 121
Phalaropes, 15, 118
Pheasant, **153**
English, 156
English Ring-necked, **156**
Mountain, **155**
Ring-necked, 156
Pheasants, 146, 152
Philadelphia Vireo, 267, **269**
Phœbe, **205**
Pied-billed Grebe, **19**

Pigeon, 159, 182
Hawk, **173**, 174
Passenger, 2, 157
Pigeons, 15, 156
Pileated Woodpecker, 188, **192**, 193
Northern, 192
Pine Siskin, 10, **231**, 232
Warbler, 11, 283, 287, **295**, 296
Pink Curlew, 93
Pintail, 54, **68**
Piping Plover, 2, 11, 117, 118, 147, **148**, 149
Pipit, 210, **308**
Plover, Black-bellied, 2, **145**, 146
Golden, 2, 116, **145**, 146, 147
Piping, 2, 11, 117, 118, 147, **148**, 149
Ring-necked, 118, 148
Plover, Semipalmated, 147, **148**
Upland, **140**, 141
Wilson's, 2, 118, **149**
Plovers, 2, 15, 118, **144**, 150
Pomarine Jaeger, 25, 26
Pompey, 304
Prairie Horned Lark, 211, 212
Warbler, 11, 283, **297**, 298
Prey, Birds of, **159**
Prothonotary Warbler, 11, 271, **274**, 275
Puffin, **22**, 23
Purple Finch, **227**, 228
Gallinule, **113**
Grackle, **225**
Martin, 12, 13, **259**
Sandpiper, **129**

Q

Quail, 7, 8, 9, **152**, 165
American, 152
Quillaree, 330

R

Rabbit Hawk, **164**
Raft Duck, 54, 73
Rail, Black, **113**
Clapper, 11, 107, **108**, 109, 110
King, **107**, 108, 110, 114
Virginia, 107, **110**, 111
Wayne's Clapper, 107, **110**
Yellow, **112**
Rails, 15, 106, 107
Rain-crow, 185, 186
Raven, 10, 214, 215
Northern, **213**, 214
Razor-billed Auk, **23**, 24
Red-back, 117
Red-backed Sandpiper, 118, **131**, 132
Red-bellied Woodpecker, **194**
Red-bellied Tropic-bird, 45
Redbird, 252
Summer, 257
Winter, 252
Red-breasted Merganser, 56, **57**, 58
Nuthatch, 10, 321, **322**
Snipe, **126**
Red-cockaded Woodpecker, 11, 189, **190**, 191
Red-eyed Vireo, 267, **268**, 269, 270
Redhead, 54, 55, **70**, 71, 72, 73, 85, 90
Red-headed Woodpecker, 172, **194**
Red-legged Duck, 61
Red Phalarope, **118**, 119
Redpoll, **230**
Linnet, 230
Red-shouldered Hawk, **167**, 168, 213
Redstart, 11, 306, **307**, 308
Red-tailed Hawk, **167**
Red-throated Loon, 18, 20, **21**, 22
Red-winged Blackbird, **219**, 220
Reed-bird, 217
Ricebird, **217**, 218
Ring-billed Gull, 27, **30**
Ringneck, 117, 148
Ring-necked Duck, 70, **76**, 77
Pheasant, 156
English, **156**
Plover, 118, 148
River Ducks, 54, 55
Robin, 12, 257, 258, **333**, 334
Snipe, **128**
Southern, **334**
Swamp, 330
Wood, 330
Roseate Spoon bill, 93
Tern, 33, **36**, 37
Rose-breasted Grosbeak, 11, **253**, 254
Rough-legged Hawk, **169**, 170
Rough-winged Swallow, 13, 262, **263**
Royal Tern, 33, **34**, 35, 36, 40
Ruby-crowned Kinglet, 326, **327**
Ruby-throated Hummingbird, **200**, 201, 328
Ruddy Duck, 54, **84**, 85
Turnstone, **150**
Ruff, **140**
Ruffed Grouse, 11, **153**, 154
Rusty Blackbird, **224**
Mockingbird, 311

Saddleback, 28
Sanderling, 133
Sandhill Crane, 2, 106, 107
Sandpiper, Baird's, 131
Bartramian, **140**
Buff-breasted, 141
Least, 118, 129, **130**, 131, 132, 133
Pectoral, **129**
Purple, 129
Red-backed, 118, **131**, 132
Semipalmated, 118, 131, **132**, 133
Solitary, **138**, 142
Spotted, 138, **142**
Stilt, **127**
Western, 132, **133**
White-rumped, 116, 129, **130**
Sandpipers, 118, **123**, 126
Sapsucker, 189, 190
Yellow-bellied, 11, **191**, 192
Savannah Blackbird, 185
Crane, 106
Sparrow, 230, **235**, 236
Western, 235
Saw-bill, 57
Saw-Duck, 57
Saw-whet Owl, **181**
Scarlet Tanager, 11, 12, 256, **257**
Scaup Duck, 55, 70, **73**, 74
Lesser, 54, 55, 70, 73, **74**, 75, 77, 78
Little, 75
Scissor-tailed Flycatcher, 202
Scoter, 55, **82**, 83
Surf, 82, **83**, 84
White-winged, 82, **83**
Scoters, 54
Scott's Seaside Sparrow, 238, 241
Scout, 104
Scow, 104
Scratchers, 152
Screech Owl, 178, **181**, 182
Florida, 182
Sea Chickens, 117, 118, 131, 132
Coot, 83
Ducks, 54, 56
Seagulls, 27
Seaside Sparrow, 238, **240**
Macgillivray's, 238, **241**
Scott's, 238, **241**
Semipalmated Plover, 147, **148**
Sandpiper, 118, 131, **132**, 133
Sharp-shinned Hawk, **165**, 166
Sharp-tailed Sparrow, 238, **239**, 240

S

Shearwater, **40**
Audubon's, 41, **42**, 43
Cory's, 41, **42**
Greater, 41, **42**
Sooty, 41, **43**
Shearwaters, **41**
Sheldrake, **56**, 57
Sheldrakes, 56
Shore-birds, 116
Short-billed Marsh Wren, **317**
Short-eared Owl, 178, **179**, 180
Shoveller, **66**, 67
Shrike, Loggerhead, 265, **266**, 267
Migrant, 265, **267**
Northern, **265**
Shrikes, 202, 262, 265, **266**
Shypoke, 104
Siskin, Pine, 10, **231**, 232
Skimmer, Black, 11, **40**, 41
Skimmers, 25, **40**
Skuas, **25**
Skunk Head, 84
Skylark, 210, 308
Slate-colored Junco, **245**, 246, 247
Small-billed Water-Thrush, 300
Snake Hawk, 162
Snipe, English, 126
Jack, 126, 130
Red-breasted, **126**
Robin, **128**
Wilson's, 124, **125**, 129
Snipes, 15, 118, **123**
Snowbird, 246, 247
Black, 246
Carolina, 6, 246
Snow Bunting, **233**
Goose, **85**, 87, 93
Greater, 85, **86**
Snowflake, 233
Snowy Egret, 11, **100**, 101
Herons, 103, 118
Owl, **184**
Solitary Sandpiper, **138**, 142
Vireo, Mountain, 269, 271
Song Sparrow, 11, **248**, 249, 250, 314
Sooty Shearwater, 41, **43**
Tern, 33, **38**
Sora, **111**
South Carolina Buzzard, 161
Southern Downy Woodpecker, 11, 189, **190**
Hairy Woodpecker, 11, **189**
Meadowlark, **221**
Robin, **334**

Sparrow, Bachman's 11, **247**
Bush, 245
Chipping, 228, 241, 243, **244**, 245, 266
Clay-colored, 243, 251
English, 12, 216, **232**, 256
European House, 232
Field, 243, **245**
Fox, **251**
Grasshopper, **236**, 237
Ground, 235, 245
Hawk, 173, **174**
Hedge, 4
Henslow's, 237, **238**
Ipswich, 230, **235**
Lark, **241**, 242
Leconte's, 237, 238, 239
Lincoln's, 248, **249**
Macgillivray's Seaside, 238, **241**
Nelson's, 238, **239**, 240
Savannah, 230, **235**, 236
Scott's Seaside, 238, **241**
Seaside, 238, **240**
Sharp-tailed, 238, **239**, 240
Song, 11, **248**, 249, 250, 314
Swamp, 243, 248, **250**
Tree, **243**, 244
Vesper, 11, **234**
Western Savannah, 235
White-crowned, **242**
White-throated, 12, 242, **243**, 250
Yellow-winged, 237
Sparrows, 16, 202, **226**
Spoonbill, Roseate, 93
Spotted Sandpiper, 138, **142**
Squaw Ducks, Old, 81
Squaws, Old, 54, 81
Starling, 216
Stilt, Blacknecked, **122**, 123
Sandpiper, 127
Stilts, 118, **121**
Stock Doves, 1
Stone Curlew, 94
Storks, 15, **93**, 95
Striker, Little, 37
Summer Duck, 69
Redbird, 257
Tanager, 11, 256, **257**, 258
Yellow-bird, **284**
Surf-Birds, **150**
Surf Scoter, 82, **83**, 84
Swainson's Hawk, 167, **168**
Warbler, 11, **275**
Swallow, Bank, **262**, 263
Barn, 11, 13, **260**, 261
Chimney, **199**
Cliff, **260**
Eaves, 260
Rough-winged, 13, 262, **263**
Tree, **261**, 262
White-bellied, 261
Swallows, 16, 202, **258**, 264
Swallow-tailed Kite, **162**
Swamp Robin, 330
Sparrow, 243, 248, **250**
Swans, 1, 15, 53, 54, 55, 82, 92
Swan, Trumpeter, 92
Whistling, 54, **91**, 92, 93
Sweet-Canada Bird, 243
Swift, Chimney, **199**, 200
Swifts, 16, 196, **199**, 200
Swimmers, Lamellirostral, **53**
Long-winged, 25, 41
Totipalmate, **45**
Tube-nosed, **41**
Swinging-birds, 267
Sycamore Warbler, 283, **293**

T

Tanagers, 202, 222, **256**
Tanager, Scarlet, 11, 12, 256, **257**
Summer, 11, 256, **257**, 258
Teal, 54, 56, 65
Blue-winged, **66**
Cinnamon, 173
European, 64
Green-winged, 64, **65**, 66
Tennessee Warbler, 277, **281**
Tern, Arctic, 33
Black, **39**, 146
Cabot's 33, **35**
Caspian, 33
Tern, Common, 33, **36**
Forster's, 33, **35**
Gull-billed, **32**, 33
Least, 33, **37**, 38, 118
Roseate, 33, **36**, 37
Royal, 33, **34**, 35, 36, 40
Sooty, 33, **38**
Terns, 15, 25, **26**, 27, 32
Thistle-Bird, 231
Thrasher, Brown, **311**, 312
Thrashers, **309**
Thrush, Bicknell's, 329, **331**
Brown, 311

Thrush, Golden-crowned, 299
Gray-cheeked, 329, **331**, 332
Hermit, 329, **332**, 333
Olive-backed, 329, 331, 332
Wilson's, 10, 330
Wood, 329, 330, 331, 334
Thrushes, 16, 202, **329**
Titlark, 308
Titmice, 202, **324**
Titmouse, Tufted, **324**
Tomtit, 325
Totipalmate Swimmers, **45**
Towhee, **251**, 252, 253
White-eyed, **252**
Toxaway Bird, 257
Traill's Flycatcher, 209
Tree Duck, 55
Fulvous, **91**

Upland Plover, **140**, 141

Veery, 329, **330**, 331
Vesper Sparrow, 11, **234**
Vireo, Blue-headed, 269, **270**, 271
Mountain, 271
Solitary, 269, 271
Philadelphia, 267, **269**
Red-eyed, 267, **268**, 269, 270
Warbling, 11, 267, **269**

Wagtails, 202, 308
Warbler, Bachman's, **277**
Bay-breasted, 283, 287, **290**
Birch, 280
Black and White, **273**, 274, 276, 291, 293
Blackburnian, 10, 283, **291**, 292
Black-poll, 283, 287, 288, **290**, 291
Black-throated Blue, 282, 283, **285**, 286
Green, 10, 11, 283, **294**
Blue-winged, 277, **278**, 279
Blue Yellow-backed, 281
Brewster's, 279
Cairns's, 6, 10, 282, **285**, 286
Canada, 10, 305, **307**
Cape May, **283**, 284
Cerulean, 283, **288**, 289, 290
Chestnut-sided, 10, 283, **289**
Connecticut, 146, 301, **302**, 303
Fly-catching, 306
Golden-winged, 10, 277, **278**, 279
Hooded, 11, **305**, 306
Kentucky, 11, 301, **302**
Tree, Sparrow, **243**, 244
Swallow, **261**, 262
Tropic-bird, Red-billed, 45
Yellow-billed, 45
Tropic-birds, 45
Trumpeter Swan, 92
Tube-nosed Swimmers, 41, **81**
Tufted Titmouse, **324**
Turkey Buzzard, 160
Vulture, 12, **160**, 161, 172, 204
Wild, 7, **154**, 155, 156, 170
Turkey-cocks, 1
Turkey-hens, 1
Turkeys, 1, 15, 152, 154, 155, 156, 215
Turnstone, Ruddy, **150**
Turnstones, 2, 118, **150**
Tyrant Flycatchers, **202**

U

V

Vireo, White-eyed, **272**
Yellow-throated, **269**, 270, 271
Vireos, 16, 201, 202, 264, **267**, 268, 269
Virginia Rail, 107, **110**, 111
Vulture, Black, 11, 160, **161**, 162
Turkey, 12, **160**, 161, 172, 204
Vultures, 15, 159, 204
American, **159**

W

Warbler, Kirtland's, 283, 298
Lawrence's, 279
Magnolia, 283, **287**, 288, 306
Mourning, 301, **303**
Myrtle, 266, 283, **287**
Nashville, 277, **279**, 280
Northern Parula, **282**
Orange-crowned, 277, **280**
Palm, 283, **296**
Parula, **281**, 282, 291
Pine, 11, 283, 287, **295**, 296
Prairie, 11, 283, **297**, 298
Prothonotary, 11, 271, **274**, 275
Swainson's, 11, **275**
Sycamore, 283, **293**
Tennessee, 277, **281**
Wilson's, 305, **306**, 307
Worm-eating, 11, **276**
Yellow, 11, 282, **284**, 285
Palm, 283, **296**, 297
Yellow-throated, 11, 283, **289**, **292**, 293, 294

Warblers, 12, 16
North Carolina Wood, 298
Old World, 202
Wood, 202, 272, 326
Warbling Vireo, 11, 267, **269**
War Loon, 20
Water-Thrush, 299, **300**
Long-billed, 301
Louisiana, 11, 276, 299, **300**, 301
Small-billed, 300
Water-Turkey, 11, **46**, 47
Water Witch, 19
Wayne's Clapper Rail, 107, **110**
Waxwing, Cedar, **264**
Waxwings, 202, **264**
Western Sandpiper, 132, **133**
Savannah Sparrow, 235
Willet, 138, **139**
Whip-poor-will, 11, 196, **197**, 198, 199
Whistler, 78
Whistling Swan, 54, **91**, 92, 93
White Brant, 86, 87
Crane, Little, 103
Ibis, 12, **93**, 94, 95
Pelican, 49, **50**
White-breasted Nuthatch, 274, **321**, 322
White-bellied Swallow, 261
White-crowned Sparrow, **242**
White-eyed Towhee, **252**
Vireo, **272**
White-fronted Goose, **87**, 88
White-rumped Sandpiper, 116, 129, **130**
White-tailed Kite, 163
White-throated Sparrow, 12, 242, **243**, 250
White-winged Crossbill, **229**, 230
Scoter, 82, **83**
Widgeon, 64
American, 63
European, **63**, 64
Wilcrissen, 196
Wild Canary, 231
Goose, 54, 89
Mare, 141
Turkey, 7, **154**, 155, 156, 170
Willet, 2, 11, 117, 138, **139**
Western, 138, **139**
Wilson's Blackcap, **306**
Petrel, **43**, 44
Phalarope, **120**, 121
Plover, 2, 118, **149**
Snipe, 124, **125**, 129
Thrush, 10, 330
Warbler, 305, **306**, 307
Will's-widow, 197
Winter Duck, 61
Redbird, 252
Wren, 10, **316**, 317
Witch, Black, 185
Water, 19
Woodcock, **124**, 125, 193
European, 125
Wood Duck, 53, 62, **69**, 70, 76
Ibis, 93, **95**
Pewee, **206**, 207, 209
Robin, 330
Thrush, **329**, 330, 331, 334
Warblers, 202, **272**, 326
Woodpecker, Downy, 10, 189, **190**, 191
Hairy, 10, 11, **189**, 190, 191
Ivory-billed, 5, 188, 192
Northern Pileated, 192
Pileated, 188, **192**, 193
Red-bellied, **194**
Red-cockaded, 11, 189, **190**, 191
Red-headed, 172, **194**
Southern Downy, 11, 189, **190**
Hairy, 11, **189**
Woodpeckers, 15, **188**, 189, 190, 191, 193
Wood Warblers, North Carolina, 298
Worm-eating Warbler, 11, **276**
Worthington's Marsh Wren, 318, 319
Wren, Bewick's, 10, 313, **314**, 315
Carolina, 11, 12, 197, 302, **313**, 314
House, 313, **315**, 316
Long-billed Marsh, **318**, 319
Marian's Marsh, 11, 318, **319**
Marsh, 312, 317
Mocking, 314
Short-billed Marsh, **317**
Winter, 10, **316**, 317
Worthington's Marsh, 318, 319
Wrens, 16, 202, **308**, 312

Y

Yellow-backed Warbler, Blue, 281
Yellow-bellied Flycatcher, **207**, 208
Sapsucker, 11, **191**, 192
Yellow-billed Cuckoo, **185**, 186
Tropic-bird, 45
Yellow-bird, Summer, **284**

Yellow-breasted Chat, 272, **304**, 305
Yellow-crowned Night Heron, **106**
Yellow-hammer, 195
Yellow-legs, 117, 122, **137**, 138
  Greater, 118, **136**, 137
  Lesser, 118, 137
Yellow Palm Warbler, 283, **296**, 297
  Rail, **112**
Yellow Warbler, 11, 282, **284**, 285
Yellow-shanks, 136
Yellow-throat, Florida, 304
  Maryland, **303**, 304
Yellow-throated Vireo, **269**, 270, 271
  Warbler, 11, 283, **292**, 293, 294
Yellow-winged Sparrow, 237

INDEX OF SCIENTIFIC NAMES

(For description of species refer to pages represented by black-face figures)

Acanthis, 227, **230**
  linaria linaria, **230**
Accipiter, 162, **164**
  cooperi, **165**
  velox, **165**
Actitis, 124, **142**
  macularia, **142**
Ægialitis, 144, **147**
  meloda, **148**
  semipalmata, **148**
Agelaius, 216, **219**
  phœniceus phœniceus, **219**
Aix, 56, **69**
  sponsa, **69**
Ajaia ajaja, 93
Alaudidæ, 201, **210**
Alca, 23
  torda, **23**
Alcedinidæ, 185, **187**
Alcidæ, 17, **22**
Alle, 22, **24**
  alle, **24**
Aluco, **177**
  pratincola, **177**
Aluconidæ, 159, **177**
Ammodramus, 227, **236**
  savannarum australis, **236**
Anas, 56, **59**
  platyrhynchos, **59**
  rubripes, **60**
Anatidæ, **53**
Anhinga, **46**, 47
  anhinga, **46**

Bæolophus, **324**
  bicolor, **324**
Bartramia, 123, **140**
  longicauda, **140**
Bombycilla, **264**
  cedrorum, **264**
Bombycillidæ, 202, **264**
Bonasa, **153**
  umbellus umbellus, **153**
Botaurus, **95**
  lentiginosus, **95**
Branta, 55, **88**
  bernicla glaucogastra, **89**

A

Anhingidæ, 45, **46**
Anoüs, 26
Anser, 55, **87**
  albifrons gambeli, **87**
Anseres, 15, **53**
Anserinæ, **85**
Anthus, **308**
  rubescens, 210, **308**
Antrostomus, **196**
  carolinensis, **197**
  vociferus vociferus, **197**
Aphrizidæ, 118, **150**
Aquila, 162, **170**
  chrysætos, **170**
Aramidæ, 107
Aramus vociferus, **107**
Archibuteo, 162, **169**
  lagopus sancti-johannis, **169**
Archilochus, **200**
  colubris, **200**
Ardea, 95, **97**
  herodias herodias, **97**
Ardeidæ, 93, **95**
Arenaria, **150**
  interpres morinella, **150**
Arquatella, **129**
  maritima maritima, 129
Asio, **178**
  flammeus, **179**
  wilsonianus, **178**
Astragalinus, 227, **230**
  tristis tristis, **230**

B

Branta, canadensis canadensis, **88**
  leucopsis, **91**
Bubo, 178, **182**
  virginianus virginianus, **182**
Buteo, 162, **166**
  borealis borealis, **167**
  lineatus lineatus, **167**
  platypterus platypterus, **168**
  swainsoni, **168**
Buteonidæ, 159, **162**
Butorides, 95, **104**
  virescens virescens, **104**

Calcarius, 227, **233**
lapponicus lapponicus, **233**
Calidris, 123, **133**
leucophæa, **133**
Campephilus, 188
Campephilus principalis, 188
Caprimulgidæ, **196**
Cardinalis, 227, **252**
cardinalis cardinalis, **252**
Carpodacus, **227**
purpureus purpureus, **227**
Catharista, 159, **161**
urubu urubu, **161**
Cathartes, 159, **160**
aura septentrionalis, **160**
Cathartidæ, **159**
Catoptrophorus, 124, **138**
semipalmatus inornatus, **139**
semipalmatus semipalmatus, **139**
Centurus, 188, **194**
carolinus, **194**
Cepphus, 23
grylle, 23
Certhia, **319**
familiaris americana, **319**
Certhiidæ, 202, **319**
Ceryle, **187**
alcyon alcyon, **187**
Chæmepelia, 156, **158**
passerina terrestris, **158**
Chætura, **199**
pelagica, **199**
Charadriidæ, 118, **144**
Charadrius, 144, **145**
dominicus dominicus, **145**
Charitonetta, 56, **79**
albeola, **79**
Chaulelasmus, 56, **62**
streperus, **62**
Chen, 55, **85**
cærulescens, **87**
hyperboreus hyperboreus, **85**
hyperboreus nivalis, **86**
Chondestes, 227, **241**
grammacus grammacus, **241**
Chordeiles, 196, **199**

C

Chordeiles, virginianus virginianus, **199**
Ciconiidæ, 93, **95**
Circus, 162, **164**
hudsonius, **164**
Cistothorus, 312, **317**
stellaris, **317**
Clangula, 56, **77**
clangula americana, **77**
islandica, **79**
Coccyges, 15, **184**
Coccyzus, **185**
americanus americanus, **185**
erythrophthalmus, **186**
Colaptes, 188
Colaptes auratus, **195**
auratus auratus, **195**
auratus luteus, **195**
Colinus, **152**
virginianus virginianus, **152**
Columbæ, 15, **156**
Columbidæ, **156**
Colymbidæ, **17**
Colymbus, 17
auritus, **18**
holbœllii, **17**
Compsothlypis, 273, **281**
americana americana, **281**
americana usneæ, **282**
Conuropsis carolinensis, **184**
Corvidæ, 202, **212**
Corvus, 212, **213**
brachyrhynchos brachyrhynchos, **215**
corax principalis, **213**
ossifragus, **216**
Coturnicops, 107, **112**
noveboracensis, **112**
Creciscus, 107, **112**
jamaicensis, **113**
Crotophaga, **185**
ani, **185**
Cryptoglaux, 178, **181**
acadica acadica, **181**
Cuculidæ, **185**
Cuculus canorus, 185
Cyanocitta, 212, **213**
cristata cristata, **213**

D

Dafila, 56, **68**
acuta, **68**
Dendrocygna, 55, **91**
bicolor, **91**
Dendroica, 273, **282**
æstiva æstiva, **284**
cærulescens cærulescens, **285**
cærulescens cairnsi, **285**

Dendroica, castanea, **290**
cerulea, **288**
coronata, **287**
discolor, **297**
dominica albilora, **293**
dominica dominica, **292**
fusca, **291**
kirtlandi, **298**
magnolia, **287**
palmarum hypochrysea, **296**
palmarum palmarum, **296**
pensylvanica, **289**
striata, **290**

Ectopistes migratorius, 157
Egretta, 95, **100**
candidissima candidissima, **100**
Elanoides, **162**
forficatus, **162**
Elanus, 162, 163
leucurus, **163**
Empidonax, 203, **207**
flaviventris, **207**
minimus, **209**

Falco, **173**
columbarius columbarius, **173**
perigrinus anatum, **173**
sparverius sparverius, **174**
Falconidæ, 159, **173**
Florida, 95, **102**
cærulea cærulea, **102**
Fratercula, 22, 23

Gallinæ, 15, **152**
Gallinago, 123, **124**
delicata, **124**
Gallinula, 107, **114**
galeata galeata, **114**
Gavia, **20**
immer, **20**
stellata, **21**
Gaviidæ, 17, **20**
Gelochelidon, 26, **32**

Hæmatopodidæ, 118, **151**
Hæmatopus, **151**
palliatus, **151**
Haliæetus, 162, **171**
leucocephalus leucocephalus, **171**
Harelda, 56, **80**
hyemalis, **80**

Dendroica, tigrina, **283**
vigorsi vigorsi, **295**
virens, **294**
Dolichonyx, 216, **217**
oryzivorus, **217**
Dryobates, **188**
borealis, **190**
pubescens medianus, **190**
pubescens pubescens, **190**
villosus auduboni, **189**
villosus villosus, **189**
Dumetella, 309, **310**
carolinensis, **310**

E

Empidonax, trailli alnorum, **209**
virescens, **208**
Ereunetes, 124, **132**
mauri, **133**
pusillus, **132**
Erismatura, 56, **84**
jamaicensis, **84**
Euphagus, 217, **224**
carolinus, **224**

F

Fratercula artica, 23
Fregata, **52**
aquila, **52**
Fregatidæ, 45, **52**
Fringillidæ, 202, **226**
Fulica, 107, **115**
americana, **115**

G

Gelochelidon nilotica, **32**
Geothlypis, 273, **303**
trichas ignota, 304
trichas trichas, **303**
Gruidæ, 106
Grus mexicana, 106
Guara, **93**
alba, **93**
Guiraca, 227, **254**
cærulea cærulea, **254**

H

Helinaia, 273, **275**
swainsoni, **275**
Helmitheros, 273, **276**
vermivorus, **276**
Helodromas, 124, **138**
solitarius solitarius, **138**
Herodias, 95, **99**

Herodias, egretta, **99**
Herodiones, 15, **93**
Himantopus, 121, **122**
mexicanus, **122**
Hirundinidæ, 202, **258**
Hirundo, 13, 258, **260**
erythrogastra, **260**
Hydranassa, 95, **101**
tricolor ruficollis, **101**

Ibididæ, **93**
Icteria, 273, **304**
virens virens, **304**
Icteridæ, 202, **216**
Icterus, 217, **222**
galbula, **223**
spurius, **222**
Ictinia, 162, **163**

Junco, 227, **245**
hyemalis carolinensis, 6, **246**

Laniidæ, 202, **265**
Lanius, **265**
borealis, **265**
ludovicianus ludovicianus, **266**
ludovicianus migrans, **267**
Lanivireo, 267, **269**
flavifrons, **269**
solitarius alticola, **271**
solitarius solitarius, **270**
Laridæ, 25, **26**
Larinæ, 26, **27**
Larus, 26, **27**
argentatus, **28**
atricilla, **30**
delewarensis, **30**

Machetes, 124, **140**
pugnax, **140**
Macrochires, 16, **196**
Macrorhamphus, 123, **126**
griseus griseus, **126**
griseus scolopaceus, **127**
Mareca, 56, **63**
americana, **64**
penelope, **63**
Marila, 56, **70**
affinis, **74**
americana, **70**
collaris, **76**

Hydrochelidon, 26, **39**
nigra surinamensis, **39**
Hylocichla, **329**
aliciæ aliciæ, **331**
alicinæ bicknelli, **331**
fuscescens fuscescens, **330**
guttata pallasi, **332**
mustelina, **329**
ustulata swainsoni, **332**

I

Ictinia, mississippiensis, **163**
Ionornis, 107, **113**
martinicus, **113**
Iridoprocne, 13, 258, **261**
bicolor, **261**
Ixobrychus, 95, **96**
exilis, **96**
neoxenus, **97**

J

Junco, hyemalis hyemalis, **245**

L

Larus, hyperboreus, **27**
marinus, **28**
philadelphia, **31**
Limicola, 15, **116**
Limosa, 123, **134**
fedoa, **134**
hæmastica, **135**
Lobipes, 118, **119**
lobatus, **119**
Longipennes, 15, **25**, 37
Lophodytes, 55, **58**
cucullatus, **58**
Loxia, 227, **228**
curvirostra minor, **229**
leucoptera, **229**

M

Marila, marila, **73**
valisineria, **71**
Megaquiscalus, 217, **226**
major major, **226**
Melanerpes, 188, **194**
erythrocephalus, **194**
Meleagridæ, 152, **154**
Meleagris, **154**
gallopavo silvestris, **154**
Melospiza, 227, **248**
georgiana, 243, **250**
lincolni lincolni, **249**
melodia melodia, **248**

Mergus, 55, **56**
americanus, **56**
serratur, **57**
Micropalama, 124, **127**
himantopus, **127**
Micropodidæ, 196, **199**
Mimidæ, 202, **309**
Mimus, **309**
polyglottos polyglottos, **309**
Mniotilta, **273**
varia, **273**
Mniotiltidæ, 202, **272**

Nannus, 312, **316**
hiemalis hiemalis, **316**
Nettion, 56, **64**
carolinense, **65**
crecca, 64
Numenius, 123, **143**
americanus, **143**
borealis, 143
hudsonicus, **144**

Oceanites, 41, **43**
oceanicus, **43**
Oceanodroma leucorhoa, 44
Ochthodromus, 144, **149**
wilsonius wilsonius, **149**
Odontophoridæ, **152**
Oidemia, 56, **82**
americana, **82**
deglandi, **83**
perspicillata, **83**
Olor, **91**
columbianus, **91**

Paludicolæ, 15, **106**
Pandion, **175**
haliætus carolinensis, **175**
Pandionidæ, 159, **175**
Paridæ, 202, **324**
Passer, 227, **232**
domesticus domesticus, **232**
Passerculus, 227, **235**
princeps, **235**
sandwichensis alaudinus, 236
sandwichensis savanna, **235**
Passerella, 227, **251**
iliaca iliaca, **251**
Passeres, 16, **201**
Passerherbulus, 227, **237**
caudacutus, **239**
Molothrus, 216, **219**
ater ater, **219**
Motacillidæ, 202, **308**
Muscivora, 202
forficatus, 202
tyrannus, 202
Mycteria, **95**
americana, **95**
Myiarchus, 202, **204**
crinitus, **204**
Myiochanes, 203, **206**
virens, **206**

N

Nutallornis, 203, **205**
borealis, **205**
Nyctanassa, 95, **106**
violacea, 106
Nyctea, 178, **184**
nyctea, **184**
Nycticorax, 95, **105**
nycticorax nævius, **105**

O

Oporornis, 273, **301**
agilis, **302**
formosus, **302**
philadelphia, **303**
Otocoris, **211**
alpestris alpestris, **211**
alpestris praticola, **212**
Otus, 178, **181**
asio asio, **181**
asio floridanus, **182**
Oxyechus, 144, **147**
vociferus vociferus, **147**

P

Passerherbulus, henslowi henslowi, **238**
lecontei, **238**
maritimus macgillivraii, **241**
maritimus maritimus, **240**
maritimus peninsulæ, **241**
nelsoni nelsoni, **239**
Passerina, 227, **255**
ciris, **256**
cyanea, **255**
Pelecanidæ, 45, **49**
Pelecanus, **49**
erythrorhynchos, **50**
occidentalis, **50**
Pelidna, 123, **131**
alpina sakhalina, **131**
Penthestes, 324, **325**

Penthestes, atricapillus atricapillus, **325**
carolinensis carolinensis, **325**
Petrochelidon, 13, 258, **260**
lunifrons lunifrons, **260**
Peucæa, 227, **247**
æstivalis bachmani, **247**
Phæthonæ thereus, 45
americanus, 45
Phaethontidæ, 45
Phalacrocoracidæ, 45, **47**
Phalacrocorax, **48**
auritus auritus, **48**
auritus floridanus, **49**
Phalaropodidæ, **118**
Phalaropus, **118**
fulicarius, **118**
Phasianidæ, 152, **156**
Phasianus, **156**
colchicus, **156**
colchicus X torquatus, **156**
torquatus, 156
Philohela, 123, **124**
minor, **124**
Phlœotomus, 188, **192**
pileatus, **192**
pileatus abieticola, **192**
pileatus pileatus, 192
Pici, 15, **188**
Picidæ, **188**
Pipilo, 227, **251**
erythrophthalmus alleni, **252**
erythrophthalmus erythrophthalmus, **251**
Piranga, **256**
Piranga, erythromelas, **257**
rubra rubra, **257**
Pisobia, 123, **129**
bairdi, 131
fuscicollis, **130**
maculata, **129**
minutilla, **130**
Planesticus, 329, **333**
migratorius achrusterus, **334**
migratorius migratorius, **333**
Plectrophenax, 227, **233**
nivalis nivalis, **233**
Plegadis autumnalis, **94**
Podilymbus, 17
podiceps, **19**
Polioptila, 202, 326, **328**
cærulea cærulea, **328**
Pocœcetes, 227, **234**
gramineus gramineus, **234**
Porzana, 107, **111**
carolina, **111**
Procellariidæ, **41**
Progne, 13, 258, **259**
subis subis, 13, **259**
Protonotaria, 273, **274**
citrea, **274**
Psittaci, 15, 184
Puffinus, **41**
borealis, **42**
gravis, **42**
griseus, **43**
lherminieri, **42**
Pygopodes, 15, 17

Q

Querquedula, 56, **66**
discors, **66**
Quiscalus, 217, **224**
Quiscalus, quiscula aeneus, **226**
quiscula quiscula, **225**

R

Rallidæ, **107**
Rallus, **107**
crepitans crepitans, **108**
crepitans waynei, **110**
elegans, **107**
virginianus, **110**
Raptores, 15, **159**
Recurvirostra, **121**
americana, **121**
Recurvirostridæ, 118, **121**
Regulus, 202, **326**
calendula calendula, **327**
satrapa satrapa, **326**
Riparia, 13, 258, **262**
riparia, **262**
Rissa, 26
Rynchopidæ, 25, **40**
Rynchops, **40**
nigra, **40**

S

Sayornis, 203, **205**
phœbe, **205**
Scolopacidæ, 118, **123**
Scoplpax rusticola, 124
Seiurus, 273, **299**
aurocapillus, **299**

Sciurus, motacilla, **300**
noveboracensis noveboracensis, **300**
Setophalga, 273, **307**
ruticilla, **307**
Sialia, 329, **334**
sialis sialis, **334**
Sitta, **321**
canadensis, **322**
carolinensis carolinensis, **321**
pusilla, **323**
Sittidæ, 202, **321**
Somateria, 56, **81**
dresseri, 82
spectabilis, **81**
Spatula, 56, **66**
clypeata, **66**
Sphyrapicus, 188, 190, **191**
varius varius, **191**
Spinus, 227, **231**
pinus pinus, **231**
Spiza, 227, 256
americana, 256
Spizella, 227, **243**
monticola monticola, **243**
pallida, 243, 251
passerina passerina, **244**
pusilla pusilla, **245**
Squatarola, 144, **145**
squatarola, **145**
Steganopodes, 15, **45**
Steganopus, 118, **120**
tricolor, **120**
Stelgidopteryx, 13, 14, 258, **263**
Stelgidopteryx, serripennds, **263**
Stercorariidæ, **25**
Stercorarius, **25**
longicaudus, 26
parasiticus, **26**
pomarinus, 26
Sterna, 26, **33**
antillarum, **37**
caspia, **33**
dougalli, **36**
forsteri, **35**
fuscata, **38**
hirundo, **36**
maxima, **34**
paradisea, 33
sandvicensis acuflavida, **35**
Sterninæ, 26, **32**
Strigidæ, 159, **178**
Strix, 178, **180**
varia alleni, **180**
varia varia, **180**
Sturnella, 216, **220**
magna, 210
magna argutula, **221**
magna magna, **220**
Sturnidæ, 216
Sturnus vulgaris, 216
Sula, **45**
bassana, **45**
leucogastra, 46
Sulidæ, **45**
Sylviidæ, 202, **326**

T

Tangaridæ, 202, **253**
Telmatodytes, 312, **318**
palustris griseus, 319
palustris marianæ, **319**
palustris palustris, **318**
Tetraonidæ, 152, **153**
Thryomanes, 312, **314**
bewicki bewicki, **314**
Thryothorus, 312, **313**
ludovicianus ludovicianus, **313**
Totanus, 124, **136**
flavipes, **137**
melanoleucus, **136**
Toxostoma, 309, **311**
rufum, **311**
Tringa, 123, **128**
canutus, **128**
Trochilidæ, 196, **200**
Troglodytes, 312, **315**
ædon ædon, **315**
Troglodyhidæ, 202, **312**
Tryngites, 123, **141**
subruficollis, **141**
Tubinares, 15, **41**
Turdidæ, 202, **329**
Tyrannidæ, 201, **202**
Tyrannus, 202, **203**
dominicensis, 203
tyrannus, **203**

U

Uria, **23**
lomvia lomvia, **23**

Vermivora, 273, **277**
bachmani, **277**
celata celata, **280**
chrysoptera, **278**
lawrencei, 279
leucobronchialis, 279
peregrina, **281**
pinus, **278**

Wilsonia, 273, **305**
canadensis, **307**

Xema, 26

Zamelodia, 227, **253**
ludoviciana, **253**
Zenaidura, 156, **157**
macroura carolinensis, **157**

V

Vermivora, rubricapilla rubricapilla, **279**
Vireo, 267, **272**
griseus griseus, 272
Vireonidæ, 202, **267**
Vireosylvs, 267
gilva gilva, **269**
olivacea, **268**
philadelphica, **269**

W

Wilsonia, citrina, **305**
pusilla pusilla, **306**

X

Z

Zonotrichia, 227, **242**
albicillis, **243**
leucophrys leucophrys, **242**

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